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THE ECONOMIC WASTE OF SICKNESS AND PREMATURE DEATH *

NORMAN BRIDGE, A.M., M.D.

LOS ANGELES

Throughout our years, from youth to age, we are individually prone to miscalculate the economies of our lives. We have aspirations and ambitions. We would get on in the world. We can earn so much. It will cost so much for food and shelter, for clothes and warmth, for schooling and for luxuries. We must have certain embellishments. A watch is an ornament and will usefully mark the time — it will cost one, or a hundred dollars. And we must have fine clothes and feathers and jewels, and amusements — we must play as well as work. Will our earnings compass all these?

Our calculations are based on the theory that these are all the elements, and that we shall continue to be here and able to work. We do not allow that perhaps we may fall sick, and find all our plans go wrong. So we provide no surplusage.

But we know that the pianist who loses a finger must change his occupation. We know that the chief oarsman who has the colic, or has eaten or drank too much, loses the race. To the engineman a spell of dizziness may cause a collision of trains; and the fame of a general, and the issue of a battle, may be lost by an attack of headache.

The problem is the same for every child. The career of your boy is at the mercy of your neighbor's boy who plays with him, and who has a throat diphtheria: So he is at the mercy of a slight blow on the back or the hip, which may disable him with joint tuberculosis, and make him a dependent for life instead of a power in the world. Or he may have an infected lung, or pleura, that knocks all your calculations awry; that transforms him from one who would lift to one who must lean all his life.

In planning our own and our children's lives we usually fail to make any calculation that health may break down, and that the individual may become a liability instead of an asset to his family and the community. If we could be compelled always to consider this vital interest, it would amount to the greatest single reform in society, for it would keep us and our children away from many of the pitfalls of physical calamity. The economics of health, sickness and premature death are at once the most needed and most neglected subjects of our study.

We covet good health because it means longer life, which is the world's desire, and the first impulse of the normal human heart. Good health makes us forget the terrors of death. Pain and suffering, doubtless, are great discipline for us, but we always hate them and always must. Sickness handicaps us and blights our prospects and hopes for the joys we think we are entitled to. So in our quiet, sane moments we are ashamed of such of our foibles and our sins as bring on sickness; for this reason we try, some of the time, to lop off these and to keep well.

Less often do we consider the economic reasons for trying to keep well, yet they are among the most vital reasons of all. We not only neglect the calculation, we are often a little ashamed to broach the subject when it involves our friends and our families; it seems mercenary and ignoble. A man will warn his son to avoid carelessness and foolishness that might make him sick or handicap him for life; he will say, "If you get sick you'll have to go to bed, take disagreeable medicine, and be kept from pleasures — and you might die." He may warn the youth that if he gets sick his mother must nurse him, and that may make her sick, but not a word about the inability of the family to bear the expense of sickness. Yet this may be the chief reason. Unable to afford a nurse, the mother nurses the family invalids and becomes one of them herself.

In an active practice of medicine of several decades, and with some familiarity with the life of many hundreds of families, I recall hardly an instance among lay people in which the caution for health's sake was frankly urged on economic grounds. And when it has been so urged it has usually been spoken of under the breath, as though it were a shame to put life and health on so sordid a basis.

But the economic basis is a most vital one, and money is our call on the world for the munitions that fight off sickness and death; for it is a fight, and a continuing one, till death takes us; comfort, health, refuge from sickness and death, are often found by means of this potent thing called money.

Sickness and early death are the greatest drains on the resources of most of us — and more than any one influence handicap us, personally and in families, in our search for the things of life that are of paramount value. Sickness is our greatest pauperizer, as health is our greatest asset; and we usually ignore both of these truths.

The actuaries have made it easy for us to state, with some approach to accuracy, the money value of health, the loss to the community from sickness through loss of earning time and from the expense that must be paid in cash. They have also shown us the vast public loss from child mortality. Not only is all sickness expensive, but epidemics have destroyed nations and

* Delivered at the Central Presbyterian Church of Rochester, N. Y., on the occasion of the meeting of the American Public Health Association and the annual conference of the Sanitary Officers of the State of New York, Sept. 8, 1915.

peoples, have led to the defeat of armies, and have interrupted and postponed for centuries great public works that have been needed in the development of society and the safety of states. The Panama Canal is one of them.

There can be no doubt that the figures are fairly correct as to the ultimate cost and the loss to the individual and the public from these calamities, but the loss appears to be largely in the cutting off of possible future gains rather than from loss of so much cash out of pocket (except sickness expense); and so the public is slow to believe wholeheartedly in the figures.

The pecuniary worth, potential and prospective, of an individual at different ages is given by Fisher as follows:

At birth	$ 90
At 5 years	950
At 10 years	2,000
At 20 years	4,000
At 30 years	4,100
At 40 years	2,900
At 80 years minus	700

The value of life is figured on the possible earning power through the years that are promised for the individual, so the value of the younger members is high; that of middle life is a diminishing amount; while the aged have less than nothing of value in this sort.

The annual cost of illness and death in the United States is conservatively placed at $460,000,000; let us add $500,000,000 for loss of earnings by the victims, and we have a total of $960,000,000.

According to the most thorough survey of Pittsburgh, covering the experience of typhoid fever for thirty-five years, Mr. F. E. Wing found that the cases lasted in disability an average of over thirty-four days, and that the cost to the community of each death was $6,000.[1] In four years the cost on this basis was $9,000,000. In October, 1907, before the filtration plant for the city water was finished, there were 593 cases. In October, 1908, after the plant was in use, there were ninety-six cases. Assuming that the 497 cases shown to be avoidable suffered a mortality of 10 per cent., which is a fair estimate, there were forty-nine deaths in one month, costing the community $294,000. At this rate the saving to the public would cover the cost of the filtration plant in nineteen months.

The loss by preventable or postponable deaths, the country over, is probably many million dollars yearly. Fisher, some years ago, figured out the economic saving throughout the country, if needless sickness, deaths and fatigue could be prevented, as 1,500 millions of dollars annually. Nobody knows, or can know exactly, what proportion of deaths is preventable or postponable, but every student of the subject is sure that a very large proportion are preventable — or rather are capable of being postponed to a later time of life. Especially is this true of the deaths of infants and children. Much of the average increase of the span of life among enlightened peoples, from about 33 to 45 or more years, has unquestionably been due to the saving of child lives.

For a long time evidence has been accumulating that the average life is growing longer. Two hundred years ago the gain was 4 or 5 years in a century; one hundred years ago it was nearly 10 years per century; now it is at least 50 per cent. more than this, or in excess of 15 years per century, in this country.

1. Irving Fisher gave to the International Congress on Tuberculosis the actual cost of each death by tuberculosis as $8,000.

We may postulate, and we ought to assert, that the great purpose of public effort should be to make the world a better place to live in. That is a broad, simple, general proposition that is understandable. It is axiomatic.

What constitutes making the community a better place to live in? What must every community do to this end? Many things may be necessary, and they will vary with local conditions, but they all tend and must tend in the final analysis to one aim, and that is the prolongation of the average human life. If human life is growing shorter, the world is a worse place; if growing longer, it is a better place.

The shortening of the average means more deaths in early years; lengthening it means fewer child deaths and more people reaching adult and advanced age; more people spared for the productive years of life. Longevity is fostered in all ages by good health and freedom from accidents and infections. These conditions connote longevity and the cutting out of the money losses of sickness, disablement, and death of prospective bread winners, otherwise the children.

With increase in average longevity the race is maintained numerically by a lower birth rate, and this invariably follows. A lower average birth rate means more vigorous mothers; fewer women destroyed in early life by excessive child bearing. Other things being equal, smaller families mean more vigorous children. High death rate among children means high birth rate. This usually means poverty, and may mean degradation. The child-bearing adults are sometimes so depressed in body and spirit by hard labor, by sickness and death about them, that all their higher ambitions are destroyed; and this *is* degradation.

A late review[2] quotes some very meaningful statistics on this subject which, while possibly not entirely accurate for all of the countries considered, are doubtless comparatively correct. It says that of 21 countries, outside of America, 11 have an average longevity of over 50 years; the other 10 under 50 years. The 11 have an average birth rate of 24.9 annually per thousand people, and a death rate of 14.08. The 10 have analogous figures of 36.2 and 22.5. Russia has the highest birth and death rate — 45 and 28.3 respectively, with a longevity of only 27.8 years, and an annual increase in population of 16.7 per cent. On the other hand, Australia has very low birth and death rates, and the highest longevity. The rates are birth 27.5, death 10.8, longevity 56, and natural increase 16.7 — exactly the same as Russia. The writer compares Austria-Hungary with Great Britain. The former has a birth rate of 31.7, death rate 21.2, longevity 38.3 years, and annual increase of 10.5 per cent.; while the figures for Great Britain are birth 24.4, death 14.2, longevity 53.8, and annual increase 10.2 per cent. The increase being so similar in the countries compared with each other, he infers some natural law maintaining a fixed relation of births to the deaths in a community. It is a logical conclusion, but the law is in part physiologic. It is not wholly some recondite "law" of unaided nature that lessens the births as the death rate falls. Other causes are a widespread reduction of marriages, especially of early ones, and a more or less extensive resort to methods of limiting the size of families — which it is a crime under our laws to teach others how to practice. Whether or not it is wicked, or how wicked soever it is, the practical

2. Editorial, North American Review, August, 1915.

fact is that some people discover methods and resort to them.

As people prosper, are more effective, live longer, become rich, educated and refined, the death rate decreases; so does the birth rate. Large families come to the few among this class who covet them, or believe, on religious grounds, that they ought to have them; but mainly they come to the poor, simple, uneducated, natural folk who love children and believe that God sends them, and these people are the stalwart ones who are forever rising in the scale of world values, and are becoming the controlling factors of society. This class itself degenerates later; and their descendants give place finally to like people as they were at the beginning, and so the wheel revolves.

With such percentages of annual increase in population as have been noted, the nations will some day reach the limit of convenient existence. Famine, pestilence and war have, in the ages past, kept the race numerically within living bounds. With world fellowship and means of transportation increasing, and the increase of land production due to improved agriculture, famines will decrease; with pestilential epidemics coming steadily under more control with a promise of suppression of most of them, the sweeping mortality of plagues is becoming less common. When the combined food products of the earth are insufficient for the mouths that are to be fed, what will happen?

Speculation may be unprofitable, but it is a safe guess that the diminishing birth rate will, so far from destroying the race, actually save it in such circumstances. Nor will the progressive reduction of births endanger the existence of the race. With the refinements and luxury of the many who will live in that far-off time, there will always be more of the humble, simple, clean and physically strong people who will preserve the race from destruction, until the approach of the end of the habitable life of the earth. That will be millions of years in the future, and I believe that even then the human race will progressively adjust itself to the oncoming severe conditions, and live ages after we short-sighted people would naturally guess that the last man must die.

With increased longevity, life is easier, and easier because of it. Life for all the people can be easier only by reason of more substance, that is, less useless expense, less waste of energy. This means stable governments, stable and fixed conditions of living, continued through many generations; good public and personal hygiene long continued; constant watchfulness to guard against dangers of all sorts. It means in general, peace and plenty. Longevity is increased by conservation of the powers of the individual, and the lessening of forced hard work for long periods, especially by women and children. It is increased by regular, moderate work, and by wholesome attention, not with soul-breaking intensity, to all the serious problems of life. But too much luxury and idleness tend to rather early degeneration of the tissues of the body, and so a shortening of the average longevity.

Moral suasion will probably never produce the greatest progress for the betterment of mankind through improved health conditions. Nor will the good example of the small minority of excellent people who lead hygienic lives accomplish enough, although it will do much.

It is necessary, and will always be necessary, for an endless campaign of education among the people, most of whom are heedless and indifferent to the dangers of accidents and infections, and harm to others. Laws and ordinances will be necessary, and their faithful execution more necessary. Political effort and agitation must be continued, so that a majority of the people will support all sane health measures. The force of law must be felt by the people of all classes, especially the careless and indifferent, to prevent them from making themselves sick, to the public loss, and from endangering their neighbors. It is unsafe to live in a community where the moderate precautions of a sane public hygiene can be defied by any man or family with impunity.

In the last few decades one European state has signally illustrated this truth. During the last few years the length of the average human life has been increasing in Europe as a whole at the rate of nearly seventeen years per century; in Prussia the gain has been at the rate of twenty-seven years. Why is this? It is certainly not accident or any one fortuitous circumstance that has done it. It is probably due to the frank obedience of the people to the health rules of a forceful government. The rules have been formulated by experts for the preservation of the health and lives of the people; and all classes have obeyed with hardly a question. If there has been a question of the authority of the state in these matters, it has been hushed in a sentiment of loyalty to the Fatherland.

America is learning slowly that government is an instrument of force; it is learning a better respect for law, especially when the law is for the protection of all the people. The old doctrine is passing that every man has a right to do anything he likes, regardless of his neighbors, unless *he* can see that he is doing them some distinct harm. The bugbear of paternalism is also passing, and the mass of the people in the most progressive communities will not tolerate the logical results of the notion that there is no need of public hygiene.

It is only by a study of well-recorded facts bearing on the public health that we may surely know whether or not we are harming our neighbors. Prussia illustrates the effect of militarism, as applied to the preservation of health, and shows the value of *compelling* people to avoid infection, carelessness and excesses that tend to sickness and death.

Will better public health, gained by methods that may seem militaristic, develop in the people that sort of vigor and virility that will tend to a martial attitude toward other nations and threaten or produce war? Such a suspicion is groundless, even childish. Wars are brought about by human selfishness, jealousy, egoism, suspicion and hate between peoples and rulers of peoples. All methods for better health, whether forceful or otherwise, are for the benefit of the nation employing them and tend to peace; never toward war against another nation, unless that nation violates flagrantly the health interests of its neighbors.

We have, in this country, done a few things that show that we are becoming awake to the need of public and private hygiene. In some of our large cities we have, within a few years, lowered our annual death rate from twenty per thousand of population to fourteen or lower, largely as a result of the most constant watchfulness and insistence on health regulations. Here are a few of the measures that have brought down the death rate and raised the average age of the people:

1. By improvement in milk supply in cities and towns, the amount of bad milk sold has been reduced often to less than one tenth of the former figure. This gain has been made at the cost of stringent ordinances, constant watchfulness of the milk supply, daily laboratory examinations of the milk, frequent inspections of farms, herds and dairies, and frequent and merciless prosecutions. And the struggle goes on for still better hygiene and economic conditions of milk supply—and there is need enough for it. Rochester (N. Y.) is wasting a half million dollars annually in the way her milk is delivered to her people.

2. Diphtheria antitoxin, and the almost universal use of it in cases of this disease, has materially lowered the death rate. The cost has been a campaign of education of the medical profession and public as to the life-saving value of the measure; the supply of the article free for the poor; the examination of throat specimens at public cost, and the insistence on scrupulosity in the manufacture of antitoxin.

3. Improvement in water supply for urban and rural populations, often at enormous expense to the public, has cost strenuous political, educational and social campaigns to induce the governments to vote the appropriations. For the effect of this measure on the death records we need only to look at the typhoid mortality of two cities, before and after. These are Chicago and Philadelphia; the drainage canal in the former, and the filter plant in the latter.

4. The destruction of mosquitoes in the prevention of malaria and yellow fever. These fevers have been among the most destructive and expensive in all history. It is impossible to compute the annual cost of them to the world before the mosquito discoveries, but it must have been scores of millions. The cost of mosquito destruction has been high; but it is a trifle compared with the cost of the diseases they produced. The control of plague and cholera constitutes a similar story. Like yellow fever, they often occur in epidemics. We know their microbic causes, and have learned how to stamp out the epidemics, and, to a degree, how to prevent them. Dr. Blue, the head of our federal health service, has shown us how these ends are attained; and our Dr. Strong, the hero of Mukden, has, in that city with a terrific epidemic of pulmonary plague, accomplished one of the most brilliant feats of control in all history.

5. Tenement house inspection and the prevention of overcrowding is a good measure that has met with less popular opposition than many other reforms.

6. The regular inspection of schools by medically educated experts eliminates children capable of spreading infection, and helps toward the relief of those handicapped by disorders that are correctible. This measure is being adopted by most progressive cities, often in the face of strong and persistent opposition. It is subject to few drawbacks, and has been almost free from abuse. It is increasingly popular, and ought to be.

7. Scientific midwifery among the poor at the hands of selected dispensary physicians and visiting nurses, and instructions to poor and ignorant mothers in the care and feeding of their babies (with free milk, if necessary). By means of these and similar measures, New York City has, within a few years, reduced its death rate among children under one year of age by more than 30 per cent. This record will be repeated by many other cities and by the more advanced country regions. But it will probably be a long day before we can match New Zealand, which has the lowest infant mortality in the world.

The poor people have, of course, accepted these benefits gladly, but the public has required vast argument before voting the needed money. With such a record before it, the public is guilty of a flagrant waste of its own substance and of constructive manslaughter, if it refuses to supply the funds.

8. Visiting nurses for ordinary sickness, in cities, instructing and helping families that need it, prevent a lot of sickness, and they hasten recovery in many cases, and so cut down the cost of such calamities. The governing bodies of cities are usually slow to discover the value of this measure.

9. Vaccination against smallpox and typhoid fever. That against smallpox, notwithstanding bitter opposition, has for many years been so general that a considerable immunity among the people seems to have been established; and that against typhoid fever will before many years, if we can bring the facts to the knowledge of the people, become very common—with the result that typhoid will become a rare disease in the general community, as it is now in the armies of the enlightened world.

10. The pure food and drug laws now in force in this country have contributed to better health among the people, as they have repressed certain forms of unfair dealing and fraud among manufacturers and merchants. This reform was bitterly opposed in Congress and the legislatures for many years by certain powerful business interests.

11. The regulation and partial suppression of the use of alcohol has cut out a great amount of useless expense to the people, as it has reduced the amount of sickness. This is the verdict of the statisticians generally, notwithstanding the contention to the contrary by some good men. I believe that no woman has made such contention. We have undertaken, by federal law, to suppress the popular use of opium and cocain, except in cases of known and necessitous sickness. And public sentiment will not allow this law to be repealed. We have made no large attempts at reducing the use of tobacco, except for children. Tobacco has been shown to increase the death rate, and the habit is a money-eater. Besides being very costly, it is probably the most grotesquely curious habit of the human race; speaking generally, no one ever began the use of tobacco because he, by himself, at first desired it. Probably a thousand million dollars annually is spent because of the tobacco habit.

12. The fashion for fresh air, outdoor sleeping, and athletics among students and the young generally is a powerful aid to hygiene, and has lessened the death rate. Let us pray that the fashion will not change. Draughts of fresh air do not cause colds; these are due to some derangement of the body health. And all the advantages of a flood of fresh air are gained by a moderate amount of it, if it is kept in motion; hence electric fans and a lesser coal bill are in order.

13. Taking some tuberculous patients off the street where they are careless with their sputum, and sending them to proper sanatoriums, not only helps them, but protects the public. Thousands of such patients are now in such places, where under watchful care they harm nobody, and have some chance of recovery themselves. Hundreds of sanatoriums, state, municipal and private, have been built and are operated at great expense, but the saving of life has much more than

covered the cost. The public education as to the dangers from careless spitting has returned more value to the public than the cost of all the sanatoriums. But this education is not more than a quarter accomplished. The propaganda must be kept up until all the people know and remember the facts.

14. The cure of hookworm disease is one of the greatest gains. We are amazed that a few cents' worth (less than one day's wage of a laboring man) of a harmless medicine could cure so destructive and costly a disease. It is now within the possibilities to make uncinariasis a rare disease, and incapable of wearing out a single patient. In Porto Rico 89,000 people were cured at a cost of 54 cents each.

Other reforms must follow, and a great and united popular sentiment push forward all such as can minimize the sickness of mankind, so that there shall be a constantly increasing number of people who will escape death until overtaken by the unavoidable degeneration of tissue due to age. Even some of these degenerations will doubtless be found preventable or postponable to a later time in life than they usually now occur.

Here are a few of the things to hope for:

(a) More educated health officers, and more education for them in universities. They must be sane people, men and women — certainly women as well as men! — who know how to get along with other people; who can usually get the laws carried out with the least friction; and who respect the rights of the people while loyal to the law; who are jealous of the rights of the weak and helpless; and who do not have an excess of official dignity, with projecting elbows. Such are people capable of proposing new and better health regulations than we have; and they can convince the majority of their constituents of the necessity of progress, and of the value of the reforms they propose. Many health officers, like other public servants, are autocratic, uncompromising and apparently anxious to show and use their authority. Neither the cause nor the public good needs such servants. People in authority, when obliged to use their power in ways likely to be displeasing to the people affected, should always regret, and act as though they regretted, to use their power with severity — and then use it politely if firmly, and only after persuasion. This is the hand within the velvet glove that usually accomplishes the difficult object with thanks rather than execration from the public.

(b) Improvement in the hygiene of rural life and rural schools. Both are disgracefully below the standard in cities. Country life ought to be the healthiest life of all; and country schools can, with only moderate industry, be made as wholesome as any school in the metropolis. The movement by two great organizations, the American Medical Association and the National Educational Association, to further this purpose ought to have our hearty encouragement. It is a profitable measure and means health and wealth for the whole country. It has not kept pace with the progress in the conveniences of country life, such as better roads, automobiles, telephones and free mail delivery. The country people are lamentably neglected in the matter of hospital care and expert nursing. A few of our states have awakened to the necessity of enabling counties to provide proper hospitals and nurses for rural communities. This movement ought to be advanced by every means possible.

(c) We should teach early and late the value of keeping the physical body up to normal vigor all the time. It wards off sicknesses and helps us to weather them when they are unavoidable, and it often keeps us out of the expensive hands of doctors and nurses. Early diagnosis of apparently trifling ailments is important. Severe diseases are thereby often prevented. This is what the school inspection doctors do for the children. In sickness, procrastination is one of the most expensive and dangerous of our indulgences.

(d) We need to make a more vigorous campaign against flies, mosquitoes and vermin. Swatting the fly is good, but it is a makeshift. We must destroy the breeding places of flies and mosquitoes. We know the methods of doing this, and it is infinitely cheaper than our burden from the unlimited breeding of these pests. But one careless and indifferent family in a neighborhood can furnish breeding places for the flies and mosquitoes for the town, and nothing will do effectively but an ordinance requiring the health officer to declare all such places to be nuisances, and to compel their abatement. This, with public sentiment to sustain the officer, would reduce these insects to a trifling inconvenience. And one popular and successful movement that could enact such an ordinance and cause its effective enforcement would mean a general interest in public health that is equal to other reforms that would give the community a nation-wide, enviable reputation, and insure the lowest death rate.

The importance of body vermin in spreading infectious diseases has been emphasized by recent studies in typhus fever. Certain of the warring nations of Europe are profitably carrying out extensive measures for scrubbing the bodies of their soldiers, and disinfecting their clothing by heat.

We might profitably increase our facilities for free baths for the poor in cities. The bath house might have facilities for heating safely and quickly each bather's clothing while he is in the bath. The self-respecting bathers would probably resent the suggestion of vermin in their clothing, but they would not object to the disinfection if told that their clothes might contain tubercle or typhoid bacilli, and that the oven would not harm the garments.

(e) We ought to make a larger effort to lessen the spread and havoc of the venereal diseases. The economic loss to the nation from them is beyond computation. The results are great suffering, disabling complications that are sometimes mortal, blindness, insanity, barrenness, locomotor ataxia, aneurysms, loss of service and other multiplied calamities. The list is long and sickening. And the diseases are widespread, especially in cities. In New York in one year the number of cases was about 4.5 per cent. of the whole population.

We have done a few things to lessen them a little, mostly working around the edges of the problem, as it were, without attacking it in the direction of its greatest menace. We have to some degree banished the promiscuous drinking cup in public places, on railroad trains, and where numbers of people are employed. This helps a little, and is a good object lesson in hygiene.

We have advised against promiscuous lip kissing, with small result to change a fashion.

We have encouraged the use of domestic and toilet facilities that tend to lessen the spread of the diseases.

We are, with admirable unanimity, successfully fighting against segregation and official examination of prostitutes. This will remove somewhat the temptation to men and boys toward the dark ways—with a fatuous sense of safety that never exists.

We have reduced somewhat the use of alcoholics, for these have led countless thousands of men and boys to contract these diseases, who otherwise would have had enough caution, self-respect and resolution to avoid exposure to them.

We have begun to get over our cowardice and prudery, and to give a few boys and girls some slight knowledge of sex hygiene, and how to avoid these infections.

We have, by an admirable addition to the principles of medical ethics, unlimbered the tongues and courage of physicians who can and will, better than formerly, protect women known to them to be in danger through expected marriage. The certificates of perfect health before marriage that a few clergymen are demanding will do a little good, but not much, because of accommodating physicians and careless examinations by those unskilled.

Surgeons, in treating these diseases, are more cautious than formerly to avoid infection, by the use of rubber gloves and other devices.

We have seen most of a certain class of doctors shamed against further spreading of that abominable physiologic heresy that the health of any man requires sexual indulgence. Their subsidence has undoubtedly lessened a little the spread of these diseases, as it has lessened the degradation of man.

We are more and more providing quick and efficient hospital and dispensary care for the poor who are overtaken by these infections, for this is humane, and is a protection to the community. Every such patient is a constant menace to the people about him.

Lastly, we are preaching the gospel of a single standard of morality for men and women alike. This is right as well as righteous, and will do good as far as it goes; but with a present record of 60 per cent. of syphilitic women, having received the infection from their husbands, it is to be feared that it will not for many years greatly influence the spread of venereal diseases. Not 1 per cent. of syphilitic men receive the infection from their wives.

Probably the most effective means within our power to lessen greatly the spread of these diseases is the general education of the young of both sexes as to their nature, their baneful effects and the way to avoid them. But this measure, clearly the right of every boy and girl to have for their own protection, and much desired by them, is strongly opposed by many good people for reasons that seem to me utterly inadequate and even nonsensical. May the wisdom of these sensitive people, the love of their kind, their respect for essential purity and the rights of the young so increase that they may come to know that whatever knowledge is necessary in order to be healthy and avoid death is proper for young and old alike; and that not forever shall the best youths of our land be allowed by their ignorance to go blindly to their destruction.

(f) Finally, and never to be forgotten, the progress we have made in cutting down the death rate has been due to the results of scientific research during the last few decades. But for this research we would still have a death rate in our cities of twenty to twenty-four per thousand annually instead of fourteen or less. In this progressive work the pathologists of America have had a great part.

The wonderful results so far achieved are a promise of greater yet to come, and tuberculosis, cancer, diabetes, pneumonia and other destroyers of mankind will yet be conquered. The public health weather vane points to more endowment of research, and that is what we most need. The workers are ready, but the public says the endowments are expensive. That is true, but the beneficial results are one hundredfold greater than the cost.

The promise of further reduction in the death rate is in two factors only: the more efficient use of the knowledge which research has already given us, and of the new knowledge which further research is bound to produce. On this progress we pin our faith, in the calm certainty that it will not fail us.

The Auditorium.

PHYSICAL EXAMINATION AND REGENERATION OF EMPLOYEES*

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YOUNGSTOWN, OHIO

The advantage to be gained by industries in this country entering the field of preventive medicine by means of the physical examination of employees depends on the attitude assumed by medical advisers and the captains of our industrial organizations. That the need for the physical examination of the working force of the world is fundamentally sound, and has an economic and humanitarian basis, has been recognized by the medical profession for years. The fear of a few people, and they are often great molders of public opinion, that some industries may abuse the privilege gained by a knowledge of the physical condition of its workingmen is no ground for the denial of its usefulness to all. Industrial organizations are in business and not philanthropy, and therefore are primarily interested in the increased efficiency and the diminished waste, which are due to preventable accidents and sickness. Industry is also humane and is as distressed at inhumane practices as is the individual. Neither the individual, industry, or, in the last analysis, society can afford any unnecessary loss of productivity, or of diminished efficiency due to reparable and preventable physical defects.

For ages the medical profession has been endeavoring to educate the public in the science of preventive medicine, and the public in turn as it has received the education responded by making new laws for the control of public health. Today we hear, knocking at the door, large aggregations of capital, asking that they may be admitted to the portals of preventive medicine, and that they may lend their aid toward stamping out the wastes due to preventable accidents and sickness. Just what industries were real pioneers in the work of the physical examination of employees and to what medical men especial credit is due does not seem to be clearly recorded.

Railroads were among the earliest to engage in this work, but with the avowed purpose of eliminating the unfit, and with no provision for physically regenerating them. I recently read in a report of the Colorado Fuel and Iron Company that many years ago Dr.

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

R. W. Corwin examined at frequent intervals those employees who worked in departments likely to be detrimental to health. As the result of an active campaign for the elimination of tuberculosis in Chicago in 1911, many firms under the leadership of Drs. Sachs, Mock, Britton, Fiske, Wieland, Lipman and McClelland examined their employees for tuberculosis, and some time since have extended the work to a complete physical examination.

Dr. I. W. Clarke of the Norton Company, Worcester, Mass., seems to be a real pioneer, inasmuch as in 1911 he conducted a thorough physical examination of their force and inaugurated a system of repair and subsequent inspection. In Europe, according to the U. S. Bureau of Labor, Statistics Bulletin No. 142, only Belgium and England have departments for the medical inspection of employees and those are poorly developed. Ohio is the only state in the Union that requires a monthly examination of workers, and it is limited to those working in lead.

At the Youngstown Sheet & Tube Co., where I am employed, we have been engaged in this work for sixteen months. We feel it our duty to find the physical defects of our employees, that we may repair them when possible, that we may protect our force from communicable disease, and that we may, in so far as we are able, have our men engaged in work suitable to their physical condition. Here they can do their work most efficiently and consequently receive a better wage.

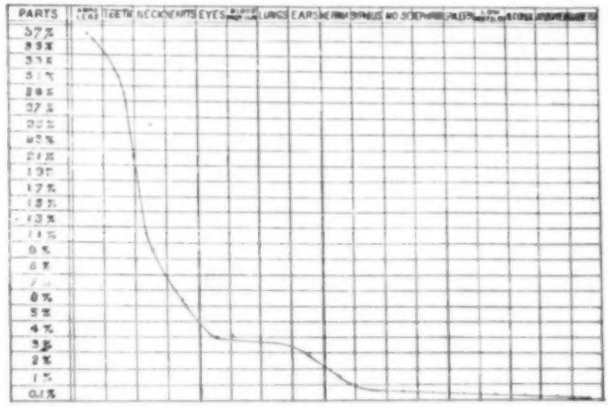

Chart 1.—Distribution of physical defects on medical inspection of 5,624 employees.

In the conduct of the examining department we have used medical graduates who have devoted their whole time to the company's work. Our examiners become familiar with the character of the work done in our various departments, and consequently are better fitted to estimate the relationship between physique and employment. Each person examined is obliged to remove his clothing, and careful arrangements are insisted on to preserve modesty and a professional decorum. The time consumed in a single case varies from ten minutes in the simple ones to as much time as is necessary for the more difficult examinations. All new applicants thus far have been examined, but as our medical force is not yet completed, we have only examined among the old men those returning to work following sickness and injury, and those who work in a department where there might be some likelihood of contracting an occupational disease.

It may be that a little knowledge of the character of our industry will help in judging of some of the results that the accompanying charts show. We employ about 8,000 men, engaged in the work of making iron and steel and many of their finished products. All steel work is known to be very heavy work, often with rather long hours, and associated with hot metals and the problems of high heats. In these plants enter many of the difficulties that railroads have in the handling of freight, since a plant is a veritable network of tracks. Manifestly, we require a different sort of individual to work here than does an industry filled with lighter burdens. This matter has to be daily weighed as we make our physical examinations, and often men must be advised to seek a vocation less arduous.

Our examination consists of taking weight and height with a notation of any identification marks.

Eyes are examined by the Snellen chart to discover defects of vision. All lids are lifted to eliminate the danger of overlooking trachoma. Various simple defects of the eye are noted.

Ears are examined with the watch only, and the distance of hearing noted.

The mouth is explored for defects, such as enlarged tonsils, gumma, new growths, etc., and a physician's description of the condition of the teeth, whether good, fair or bad is made.

The neck is palpated for glandular involvement, and any other signs of disease are noted.

The bared chest is carefully gone over by auscultation, percussion and palpation, with special effort directed toward tuberculosis and heart lesions. Other defects discovered are placed in the record.

The abdomen is palpated.

The inguinal region is recorded as to hernias, inguinal adenitis and other defects.

Penis and scrotum are examined for their local diseases.

Extremities are inspected for old injuries, varicose veins, flat feet, etc., and each applicant has his knee jerks tested.

Thus far we have taken the systolic and diastolic blood pressure, a urinary examination on all men over 40, and on all cases believed to have definite heart lesions.

It may be pertinent to bring up the question that is so often asked: "Do not the the men object to such an extensive examination?" I will answer by referring to our statistics which show that only four out of 5,624 men submitted for examination refused. In Chart 1 will be found a record of the physical defects that we have found in 5,624 examinations. Many of these defects seem too simple to need attention, but it is our continued effort to remedy the most important and as many others as possible. Teeth usually head the list, and the neck with its large quota of enlarged cervical glands follows. This condition and its ill effects have been taken seriously by at least one concern, the Goodrich Rubber Company of Akron, Ohio, and they have employed full-time dentists to fix the teeth and instruct in oral hygiene. Their dentist in 100 examinations could find only two patients whose teeth could be classed as fair. Others no doubt, prompted by the excellent work of this company, will found dental departments.

The heading Hearts denotes those in which we felt we could demonstrate a definite organic lesion. Eyes include mainly those which were trachomatous and of such deficient vision as to require correction. Blood pressures represent cases that were in systole above

150 mm. or which had an excessive pulse pressure. Ears are only classified according to hearing, regardless of cause. Syphilis refers to those cases that were able to be demonstrated without blood tests, but from history and physical findings.

Our blood pressure findings in men over 40 years were very interesting to us, but from them we do not feel that we have yet gained any knowledge that will help us in suiting the man with high pressure to any given work. These pressures were all taken in the sitting position and were on men applying for work, many of whom felt physically fit.

We had hoped that some idea could be determined from the systolic, diastolic and pulse ratio as to whether we could expect albumin and casts in the urine. The albumin and casts seem to be dependent on other factors, for it was not uncommon to find them in low and medium pressures, as well as to find them absent in pressures over 180 mm. Since we realized that the time of existence might be a factor, we have endeavored and succeeded in watching two men at hard labor with pressures of over 200 mm. systolic for six months. These men are two of the best workmen in a gang of many and seem to feel no ill effect from their high pressure. In both of them as yet there has not appeared albumin or casts in the urine.

Chart 3 illustrates the anatomic distribution and the percentage of the causes marked in the surrounding circle that we felt necessitated disqualification. Eyes, one of the largest causes, were those affected with trachoma, and deficient eyesight that could not be corrected. Men having hernias, without a truss or operation, we do not accept. Heart lesions represented those that were not fully compensated, as evidenced by the physical findings of the heart, blood pressure and kidneys. Men with lung affections were largely refused because of tuberculosis and disease conditions that manifestly were sorely in need of treatment. For high blood pressures men were not disqualified unless the systolic pressure was over 180 mm. Many between 150 mm. and 180 mm. were advised to take treatment and return later, their condition being explained to them.

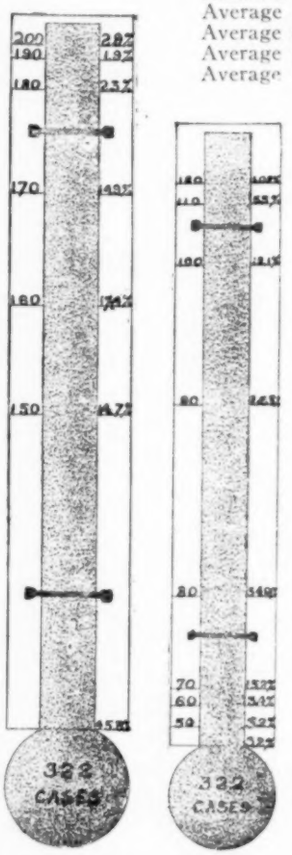

Chart 2.—Graphic representation of blood pressures in 322 men; at left illustrating percentage of height of systolic pressure; at right, diastolic pressures.

Chart 4 is the part of the work in which we are particularly interested. It shows, now numbering 525, the men that we have kept at work and are observing at least once a month. This is the class of case that we are trying to regenerate physically and make into useful and efficient citizens. Let us take the eyes first.

During the latter part of 1913 it was noticed that there was a large number of trachoma cases in our mills and vicinity. After some delay the U. S. Government was petitioned to make a survey of the village of East Youngstown to see to what extent trachoma existed and to find its cause and remedy. The Public Health Service sent to our aid Major J. W. Schereschewsky, who after an examination of 5,962 of our employees found seventy-six cases of positive trachoma; a percentage of 1.3. He also examined 652 schoolchildren, mostly sons and daughters of the same men, and found that there were ten cases positive; a percentage of 1.53.

DATA FROM EXAMINATIONS

Number of cases	322
Average systolic pressure	147.7 mm.
Average diastolic pressure	90.2 mm.
Average pulse pressure	57.5 mm.
Average age	44.2 yrs.
Albumin in urine found in	23.6 per cent.
Average systolic pressure	163.6 mm.
Average diastolic pressure	95.5 mm.
Average pulse pressure	68.1 mm.
Average age	45.3 yrs.
Albumin and heart lesions in	4.36 per cent.
Average systolic pressure	162.9 mm.
Average diastolic pressure	93.1 mm.
Average pulse pressure	69.8 mm.
Average age	45.3 yrs.

The company immediately opened a hospital for the quarantine and treatment of these cases. Drs. Hartzell, Biercamp and Goldcamp, eye specialists, were employed to administer the treatment and nurses were hired to assist. A sleeping room, loafing room, dining room and kitchen were installed, and a sufficient amount of help to care for them, including a patrolman to enforce quarantine. Many were operated in the general hospital at the expense of the company. After being improved and removed from the infective class, these men were returned to work and kept under observation. During the last year only five cases have recurred and the patients have been obliged to receive further treatment.

Acting on the further suggestion of Dr. Schereschewsky, the company employed two full-time surgeons, Dr. R. B. Dobbins and myself, who from April, 1914, to April, 1915, examined the eyes of 5,248 applicants for employment and have found twenty-eight positive cases, five recurrent cases, ten cases in persons who had lived in our vicinity less than five days, giving a percentage of 5 against Dr. Schereschewsky's 1.3 per cent. of the year before.

The patients that we found were treated partly at the expense of the company and partly at the expense of the township trustees. One point I wish to bring out is that the positive cases in persons who had lived with us less than five days were probably the foci of the twenty-eight cases, and illustrates that trachoma is not limited to East Youngstown, but is in your own city if you look for it. A further fact must be noted, and that is that no city or industry can stamp out trachoma without the assistance of all cities and all industries. Nevertheless, I am sure that I have positive evidence that some industries engaged in the physical examination of their working men fail to make any effort to discover this disorder.

Another class of eye cases under constant supervision are those men with one eye, who for their own

protection are required to wear goggles while at work. This is accomplished by daily inspection made by the safety inspectors.

Hernias ran 2.6 per cent. in our examinations, and all examined by us either wear a truss or have been operated on. We have ninety-six trusses on men with hernias, and in order to know whether they are wearing these trusses or not, at frequent intervals and without previous warning they are inspected. During the last year we have operated on those who desired an operation and now have done twenty-two herniotomies free of charge. These hernia patients were in the hospital on an average of eighteen days and returned to their usual occupation at the end of six weeks. So far there have been no infections or recurrences. Heart and high blood-pressure patients are changed if necessary to work suitable to their condition, treatment given sometimes by us, more often by family physicians, but they are always kept under supervision. Lung cases under observation are mainly in those men who show indefinite symptoms of tuberculosis and in whom we are not positive as to diagnosis.

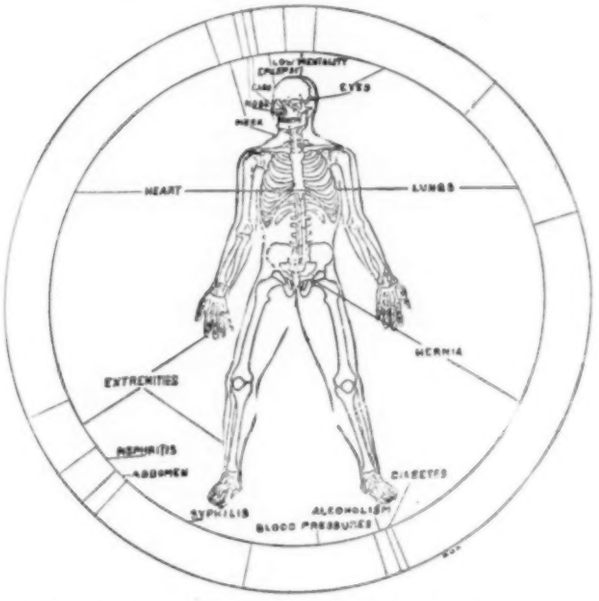

Chart 3.—Anatomic distribution of defects that disqualify.

Those having tuberculosis are placed in sanatoriums. For the nephritics we insist on treatment and make frequent urinary examinations to determine their condition.

Our practice of examining men who return to work following an illness, and who are leaving work because of sickness, is an absolute necessity. Recently we had its usefulness forcibly demonstrated to us. It was our fortune to find early in the day two cases of smallpox. These men were immediately sent home and all in their departments were vaccinated. In three days and a half without increasing the medical force, Dr. Dobbins and myself vaccinated 2,204 men. Of this number there were 1,183 fair or good vaccinations, in spite of the fact that many had been previously vaccinated, and to date there have been no infections. The result was that smallpox was eliminated from our mills.

The Ford Company and others have demonstrated that supervision of sickness in a factory diminishes absenteeism from that cause to a very large extent, and markedly decreases the time lost from work.

To properly understand his duty in this work one must have a fairly clear vision of its relation to the individual, the industry and to society. An industrial medical expert is engaged not only in the work of preventive medicine, but also in the science of preventive surgery. It is just as important to the individual that we do not overload him and cause a hernia as it is to prevent him from acquiring tuberculosis or lead poisoning. It is as necessary that we learn the safety limits of fatigue, with its consequences, as to prevent smallpox or other contagious disease. We must learn what the human body can safely do, and then ask it to do it. The increased efficiency of the laborer betters his condition in ratio to his production, and his production depends on his physical condition. Certainly a working man has the right to be protected from syphilis, tuberculosis and other infectious and contagious diseases.

Surely it is not right to ask a man with heart disease to compete for his living with one with a sound heart. It is proper and fair that we, as agents of society, until that day comes when society shall employ some other method to do this work, should endeavor to find these defects and remedy them. It has been our desire to relieve all those unfit when we can.

In this regenerative work we have tried to eliminate all appearances of paternalism, and a possible result, pauperism. We have felt it much better for the afflicted to pay a part or all of the bill required to make him a useful unit of society. Many men were required to pay the cost of medical care though the money was loaned them by the company. Men in sanatoriums were cared for under this plan, and the cost in general hospitals was paid by the individual. Some patients found unable to pay were placed by our medical force, through the various charitable agencies, in the institutions that were suited to their case. The net result to the working force is that they are protected from disease while at work, and that if ill, someone is interested in arranging that they may have a chance to become well.

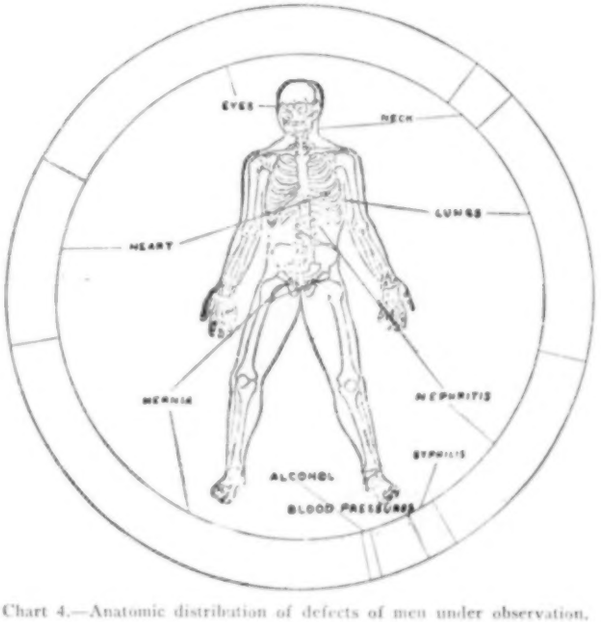

Chart 4.—Anatomic distribution of defects of men under observation.

Any industry is but an agent of society and has no more right to be extravagant and countenance preventable wastes than has that agent of society which we all recognize, our national government. Preventable loss from work due to sickness and accident is a bill that we all contribute to in the daily cost of living. Grieves estimates that it costs on the average $35 a man in the steel industry to hire and bring him to efficiency. If an industry can keep a constant force by eliminating sickness and accident as far as possible, it may make a greater profit; also the individual does not lose his wage, which he sorely needs, and society does not have to dispense with production which it must have if it is to compete with the progress of the world. Society must profit if there is a decrease in the loss of productivity due to sickness and it must gain if there is a daily increase of productivity due to increased efficiency of healthy workmen. No less valuable is the instruction given those who in the past have been the hardest to reach. In this movement we practically have a compulsory education of adults in the value of preventive medicine, and ultimately all must learn that a healthy body is the greatest asset toward a prosperous life.

A further question is asked, "What is to become of the rejected and unfit?" Economically, the problem is better for society if it can see the cost of the burden of the unfit than if the debt is concealed as we now have it. If any industry pays an employee two dollars and his producing capacity is in reality worth but fifty cents daily, then that industry appears to be giving in charity one dollar and fifty cents. Industries in the last analysis do not pay the loss at all, but somewhere it is charged into the cost of production, and you and I, members of society, pay the loss in our daily cost of living. Without a doubt those reparable should be compelled to improve their physical condition, if possible at their own expense. Those unable to bear the financial burden must be provided for by society, which must expand its facilities for medical work. The bill to the community should be borne by all. I see no better way than state insurance, which makes a man, while well, contribute toward the cost of care for society's infirm. If it is fair for a state to insure us against incapacity due to accidents, it is right that the state or nation should insure us against sickness and incapacity due to old age.

Finally, the solution of this great problem rests in the knowledge that medical men possess, and their opportunity to use that knowledge. Industry is beginning to ask for us and the response, I am sorry to say, is not just what it should be. No medical man can expect to solve these problems if he devotes but a part of his time to this work, and yet that is the sentiment from many in the field. This work is fast becoming a new specialty in medicine, and if one desires to render a big and lasting service to humanity, this branch of preventive medicine offers an opportunity which is not exceeded by any other.

Heredity Versus Environment.—Only by constant selection of the best can any race ever be improved. No education, no environment of any nature, can ever make any appreciable progress even though these same favorable surroundings may produce, through ages, a definite but indefinitely slow increment, which by constant repetition becomes slowly available in heredity, but by no means fixed, so that reproduction, true to the better type, can be depended on.—Luther Burbank.

OCCUPATIONS AND THE VENEREAL DISEASES *

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Venereal diseases are, of course, not directly related to occupations, and are therefore in no sense to be considered as occupational diseases. There is ample evidence, however, to prove that the character of certain occupations and the environment of certain industries are important predisposing factors in their spread. Industrial health hazards have been defined as working conditions which, while they may not impair the more resistant worker until after a prolonged period, produce morbid conditions in the average worker, and tend ultimately to create preventable and degenerative diseases in all persons so subjected. These hazards readily fall into several recognized groups — the dusts and chemical irritants, the trade poisons, and the microorganisms, such as anthrax, which are directly disseminated through industry. Then there are certain diseases, of which tuberculosis is an example, wherein the occupation itself is not so important as the conditions under which it is conducted. Dampness, darkness, devitalized air, physical inactivity, and fatigue are illustrations of such conditions. There are still other groups of hazards which owe their origin to prevailing beliefs among those engaged in various industries, and to the mental depression brought about by the conditions of labor. For example, the common belief that the use of alcohol will counteract the effects of the dust and poison hazards leads to a supplementary hazard known as industrial stimulantism. Similarly unwholesome, insanitary, depressing surroundings combined with lack of ample water supplies encourage excessive use of other stimulants of like character or even of serious habit-forming drugs.

There is increasing evidence in support of recognizing social and moral hazards of industry as well as health hazards. Venereal infections illustrate a group of diseases not directly related to industrial health hazards, but closely related to moral and social hazards of occupation.

Certain industries are so conducted that young men and women are required to associate under conditions calculated to deaden ambition and self-respect, to arouse sex impulses, break down moral protection, preclude marriage, and eliminate home influences, thereby placing a premium on promiscuous sex relations and the contraction of venereal infections. In such ways industry plays a large part in the problem of venereal disease dissemination.

During the past year in the Boston Dispensary 369 new venereal disease patients coming to the evening pay clinic were classified as follows:

Single under 21 years of age	23.5	per cent.
Single over 21 years of age	65	per cent.
Total single	88.5	per cent.
Married under 30 years of age	6	per cent.
Married over 30 years of age	5.5	per cent.
Total married	11.5	per cent.

These patients gave their incomes as:

$10 or less per week	41 +	per cent.
From $10 to $15 per week	48 +	per cent.
From $15 to $20 per week	9 +	per cent.
Over $20 per week	0.9	per cent.

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Other facts in the social histories of these men indicated that the majority of them were living in lodgings. It is not necessary to picture the environmental and social conditions under which these men live, nor to do more than mention what these conditions mean when combined with a prevailing belief in the so-called sex necessity for men. In a sense there is involved here a moral hazard which is comparable to the health hazard described as industrial stimulantism.

Venereal diseases are peculiarly a group which do not lend themselves to statistical or etiologic analysis beyond the purely scientific facts of their origin and methods of transmission. It will be profitable to summarize here these scientific facts. Venereal diseases are communicable parasitic infections due to identified organisms; their methods of transmission are known, and a practical laboratory and clinical technic has been worked out for diagnosing each of them; they are widely prevalent throughout the world and are not limited to any race, sex, age, or condition of people; they find their chief opportunity for dissemination in the sex relations of infected individuals with other individuals who are susceptible; they are not exclusively transmitted through the promiscuous sex relations condemned by society as harmful alike to the health, the morals and the social progress of a people; recent methods of treatment make practicable the shortening of the period of infectivity and improve the chances of ultimate recovery for the individual; once contracted they may run their course to recovery with or without medical assistance, but under present conditions an unknown and very large percentage of those infected never regain their health or never cease to be carriers of either or both syphilis and gonorrhea and therefore a continuous menace to society. Various efficiency tests of syphilis and venereal clinics have shown averages of 11 or 12 per cent. only of the cases discharged as cured, and high percentages of cases unimproved leaving after one or several visits. What this means to the public can perhaps be paralleled by the spectacular outbreak of smallpox which occurred in Montreal in 1887, when the panic stricken inmates of a hospital after exposure to an unrecognized case were permitted to scatter through the city with the result that several thousand persons developed the disease and many died. Outbreaks of venereal diseases are not spectacular or sudden, but their insidious spread makes them far more dangerous than smallpox.

With these general facts before us, the medical lines of attack are clear: 1. We must seek by cooperation with or control of the infected individual to prevent his infecting others. 2. We must endeavor by education and administrative measures to enable the uninfected members of society to protect themselves against infection. Early diagnosis and ample treatment facilities are essential, and ultimately we may expect to see adequate plans developed for promoting personal prophylaxis, chief among which must stand continence. Meanwhile, much may be done with the environment, and this brings us back to occupations.

In the conditions I have cited we have a series of hazards, whatever their particular designation may be, which need to be eliminated by society. Alcohol is one of the hazards which is a connecting link between occupation and venereal diseases through the agency of prostitution. Careful investigations of commercialized prostitution in over one hundred cities and towns in the United States has shown that the sale of alcoholic drinks is as much a part of the business as the immoral practices. Every large employer of men knows the part played by venereal disease in lowering the efficiency of the company's employees. The reports of the United States Navy for 1914 show a total of 141,378 sick days due to venereal disease, or the equivalent of a complete loss of 456 men from service for the year. It may be contended that this is not evidence of a true occupation hazard, yet it can be proved that venereal diseases are most prevalent among those persons engaged in occupations which discourage early marriage and home building. The recent studies by the U. S. Public Health Service and by the New York Health Department on venereal diseases among garment workers, peddlers and others illustrate the feasibility of obtaining valuable data on occupation in relation to venereal diseases. The report blank for the Ohio State Board of Health's Department of Occupational Diseases includes under the subhead venereal diseases, questions concerning companions, relations of the sexes during work and "moral atmosphere."

The records of a venereal clinic for men in New York examined by Mr. Platt during the past year shows the street prostitute to have been the source of infection in 36.6+ per cent., house prostitutes 18.9 per cent., domestics 10 per cent., friends 10 per cent., working women 7.7 per cent., wives 1.5 per cent., and unknown 14.7 per cent. of the cases.

Restating the lines of warfare on venereal diseases as a menace to industry and to society at large, we find four important points of attack: (1) the medical — prevention of spread from known infected persons to others; (2) the educational — instruction of the public in methods of avoiding infection; (3) the environmental — repression of prostitution and safeguarding of industries and recreation from predisposing factors; (4) the moral — training the individual in habits of control of sex impulses, and inculcating ideals of marriage and parenthood.

In all of this the physicians and the industrial leaders, among both employers and employees, have a part to play. Every system of physical examination and treatment of industrial workers has developed facts showing the great importance of syphilis and gonococcus infections in lowering the efficiency of workmen and increasing the public and private expenses due to ill health, moral ills and death.

Surgeon Banks of the United States Public Health Service has estimated on the most careful statistics we have in the country that there are at least 2,500,000 cases requiring medical treatment each year in the United States. Who are treating these cases? How far are industries responsible for the recruiting of this group?

The purpose of this paper is to stimulate discussion at this session on the importance of considering venereal diseases in relation to industries. Many experiments are now on record of industrial corporations starting educational activities in this direction. Social hygiene societies and public departments of administration are doing work along new and practical lines. The medical profession is awaking to its social responsibility in this field. Industrial employers and employees may be confidently counted on to cooperate in practical plans which the medical profession proposes.

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SICKNESS INSURANCE

A PREVENTIVE OF CHARITY PRACTICE *

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Industrial hygiene and the health of the people whose daily wage depends so largely on their physical efficiency, have come to constitute one of our most serious industrial problems.

Progressive leaders of labor have found that industrial hygiene is common ground on which they can meet capital, and affords excellent opportunity for bettering working conditions.

Wise business men are coming to realize this and are giving very serious consideration to the physical fitness of their employees.

Health authorities are finding that the total environment of the workers is a more important factor in causing disease than the germs of the infectious diseases, which have heretofore occupied so much of their time.

The magnitude of the problem can hardly be comprehended. There are approximately 30,000,000 wage earners in the United States. Each one of these loses an average of about nine days per year on account of sickness. This estimate is based on an investigation made for the U. S. Commission on Industrial Relations of about 1,000,000 industrial workers in the United States, and nearly coincides with the German and English figures for over 26,000,000 insured wage earners, which show an average of eight to nine days of sickness per year. Estimating the daily wage at $2 and the cost of medical services at $1 per day, the annual loss would amount to over $800,000,000. This leaves out of consideration the human suffering and losses due to death and decrease in efficiency which follows illness. It also leaves out of consideration the effect on the family when the breadwinner is disabled.

When the losses due to sickness come to the families living just above the poverty level, this circumstance causes them to fall below that level. These are the conditions which have compelled the partnership between poverty and disease. There is no need to tell physicians that sickness increases as the income decreases; that the mortality rate in the poorest sections of a city is often double that of the best sections; that the infant mortality in the families in which the father earns less than $10 per week is three times that in the families in which the father earns $1,200 or more per year,[1] and that the tuberculosis rate is roughly in inverse ratio to the income.

There is no question in the mind of the experienced physician that at times poverty is caused by disease, and at times disease is caused by poverty, and that this vicious circle must be broken before disease prevention can make much headway among this group of people. Of what use is it for us to tell the tuberculous workingman to stop worrying, get plenty of fresh air, eat fresh eggs and drink milk with plenty of cream, and sleep in a separate room, when the week's wages are already barely sufficient to meet the actual needs of the family. The low paid workers are forced to live in unhealthy environment and on a poor diet, which lessen resistance to disease and cause sickness, which in turn results in unemployment, decreased income, demoralization, and dependency.

CONDITIONS UNDERLYING THE PROBLEM OF THE WAGE-EARNER'S HEALTH

The causes of sickness are many and ill defined. There are causes in the workshop for which the industry is clearly responsible. There are home environments for which the workers are responsible. There are community conditions for which the public through governmental agencies is responsible. But, there are many conditions for which there is a joint responsibility and an overlapping of the fields in which each must share in the other's work for betterment.

1. *Conditions for Which the Employer and the Industry are Responsible.*—There are so many diseases for which modern industry is beyond all question responsible that space will not be given even to enumerate them here. It is only necessary to point out that, outside of the purely occupational diseases like phosphorus, lead, mercury and arsenic poisoning, and those diseases due to working in compressed air and the like, there are many ills which are caused or aggravated "by hours of labor which cause excessive fatigue; by machinery and methods of work and payment which cause nervous strain, and by general sanitary conditions in places of work."

It is therefore obvious that industrial diseases are "morbid results of occupational activity traceable to specific causes and labor conditions, and followed by more or less extended incapacity for work." [2]

The occupational hazard is often obscure, but is clearly developed when careful records are kept of all disease among a large number of workmen in many occupations, as was done by "The Local Sick Benefit Society of Leipzig and Vicinity" for the period 1887-1904. These records showed that the number of days lost per year on account of sickness varied according to occupation from four days for clerks and salesmen to 12.15 for polishers and metal grinders, 12.56 days for iron and steel workers and 14.43 days for refiners in sugar factories.

2. *Conditions for Which the Public is Responsible.*—The conditions for which the public is primarily responsible are community conditions. In times now passed health authorities confined themselves to operating quarantines and the abatement of nuisances, but now under the broadening influence of a clearer knowledge of the causes of disease, they are extending their activities beyond what was originally considered the province of the government. At first they went beyond the streets and public places and fixed regulations for proper housing, pure water, pure food, sanitary workshops. As working and living conditions have become more complex, the duties of the public have developed until now its regulatory power is extending into the home and shop, and the highest courts of the land are upholding this power, as is seen in decisions affirming the right of the state to limit hours of work and to compel the payment of wages to women which will be sufficient to maintain an adequate and healthful standard of living.

3. *Conditions for Which the Employees are Responsible.*—With all the conditions for which the public and employers are responsible eliminated, there still remains a large residue for which the employees are

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Duke, Emma: Infant Mortality, U. S. Children's Bureau, p. 45.

2. American Labor Legislation Review, 1910, i, No. 1, p. 125.

responsible. In spite of the realization of employers of a larger degree of responsibility for the health of the workers, and in spite of the ever-broadening sphere of public activities to protect the health of all citizens, there remains the individual responsibility for the home environment. It must be stated, however, that the responsibility for their environment does not rest altogether on the workers. No one is able to choose every part of one's environment, and this is especially true of many workers who have little or no choice, but must accept what is offered in the way of employment, and must also accept the home environment for which they can pay with the wages earned. This will continue to be true, especially in the unskilled group, so long as the supply of laborers is greater than the demand and the competition for employment makes it possible for the employer to fix the terms of employment.

The great burden of maintaining proper hygienic standards in the home, after all, rests on the wage earners, who are least able to bear it and who are so often ignorant of their importance. Physicians know, from experience, of the inability of individual wage earners to meet this responsibility, but they are apt to conclude that volunteer welfare workers, relief societies, and charity organizations are providing for the cases which come to their knowledge.

It is necessary, therefore, to point out that recent investigations show that about one half of the native-born families and two thirds of the foreign-born families in the United States had incomes of less than $750 a year. Seventeen per cent. of all native-born and one third of all foreign-born families had incomes of less than $500 a year.[3] These investigations included incomes from all sources and included earnings of wives and children and payments from boarders and lodgers. The inadequacy of these incomes may be measured when it is stated that the consensus of conclusions taken from a number of careful studies of expenditures of workingmen's families show that an average family cannot live for less than $800 to $900 per annum. (The average family is defined as composed of man, wife, and three children under 14 years.) In small cities and towns where rents are lower, the amount required is smaller. But even in these towns a minimum of $700 to $800 may be fixed with the assurance that the amount required is more rather than less.

The adequacy of this standard may be judged by the manner of expenditure, as shown by budgets studied in families living in New England and other Eastern cities, whose incomes averaged about $750 a year, the family being of the average size.

TABLE SHOWING DISTRIBUTION OF FAMILY BUDGET

	Per Cent. of Income	Amount
Food	47	$360
Rent	17	126
Clothing	16	123
Fuel and light	5	41
Health	2	17
Sundries	13	98
Total	100	$765

With an income of $750 a year and an expenditure of $650 a year for the bare necessities of living, the narrow margin is all too apparent. When the numerous necessary sundry expenses are deducted from the margin of $100, there is little left to provide a surplus to meet the expenses of an emergency. No reasonable thrift can save from this small margin a sum sufficient to pay for a death, an additional birth, or unusual sickness.

The question may well be raised as to whether an income of $750 is sufficient for the average family. As to more than half of all the workingmen's families in the United States whose income is less than $750 a year there can be no doubt as to their inability to maintain healthful conditions in the home.

The conclusion is apparent, therefore, that the largest share of the responsibility for the wage-earner's health rests on the workers who cannot carry the load. Society expects these to carry the greatest part of the burden of sickness, when under the best conditions they can barely meet expenses and furthermore they have the least experience in disease prevention. This is expected of them after they are handicapped by an environment which our social organization has for centuries decreed for those who are unskilled or untrained for some trade.

TREND TOWARD COLLECTIVE ACTION AND INSURANCE METHODS

With the responsibility for the wage-earners' health so definitely fixed on the employer, the employee and the public, and with this responsibility so intimately related that the duties often overlap, cooperative action is apparently the best remedy. Collective action is the only method which will enable each group immediately to meet the problem of relief of sickness without greatly increasing the amount now expended for this purpose. If this collective action is further extended into the field of disease prevention, the present cost can be greatly reduced. This is, in fact, the essential principle of sickness insurance.

Insurance is a method by which a group of persons, each in danger of some loss, the incidence of which cannot be foreseen, can distribute the cost of such loss, where it occurs to any of them, over the whole group and lighten the burden of its most serious economic effects. The results are the strongest incentive to lessen the cost by diminishing the frequency of losses. In sickness insurance the employer, the employee and the public pay the premiums for insurance against the loss to which each group is liable in case of sickness of employees. In this way the loss is distributed and a strong incentive created in each group to reduce the cost by preventing sickness. This division of the cost would greatly reduce the amount now spent by employees for sickness, and distributes the payment over such a long period of time that the poorest paid wage earner can meet the expense without materially lowering his present standard of living. Furthermore, it would meet this expense in a business-like way and leaves no "taint of charity."

While relief of sickness must be the primary object of sickness insurance, prevention of sickness will be the greatest result. There can be little doubt as to this when the results of insurance in other fields are studied. It is only necessary to mention fire insurance and the great effort to prevent fires by building regulations, fire inspections and the like; marine insurance and efforts to prevent losses at sea; and accident insurance and the "Safety First" movement.

The experience with sickness insurance in foreign countries has been such that practically every European country has some form of sickness insurance law, and in those countries with comprehensive laws, the results

3. Reports of the U. S. Immigration Commission, 1911, xix, 125.

in stimulating efforts to prevent sickness have been very encouraging. It is also a significant fact that no country which has enacted laws on this subject has repealed them; on the contrary, many have extended and strengthened them.

In the United States no state has enacted a law on the subject, but there are several million persons insured against sickness in labor unions, establishment funds, fraternal orders, or commercial companies. It is therefore no novelty in this country, but a method which is growing popular, as is shown by the increasing demand.

A PRACTICAL PLAN FOR SICKNESS INSURANCE

To meet the requirements for the relief and prevention of sickness in the United States, a sickness insurance law could be enacted by Congress to apply to all industries in all the states, or by the state legislature to apply within the state.

An examination of the most successful European governmental systems of sickness insurance and of the principles and methods practiced by mutual benefit societies, trade unions, and industrial establishments in this country suggests that a sickness insurance system, whether state or local, should include the following provisions:

1. Insured Persons.—All persons engaged in gainful occupations and earning a specified annual income ($1,000 or less) should be entitled to the benefits provided under the law.

All persons earning more than the specified annual income should be allowed to qualify for the same benefits or greater benefits according to annual income.

2. Funds.—A tentative ratio of contributions has been suggested as follows:

Employees	50 per cent.
Employers	40 per cent.
Government	10 per cent.

Provision should be made for persons earning more than the specified income whereby they could pay a larger proportion of the contributions and receive larger benefits.

3. Benefits.—The following benefits should be provided:

Cash Benefits: Weekly cash payments to begin after the first week of disability due to sickness, nonindustrial accident, or to child bearing by the beneficiary, for a period not to exceed twenty-six weeks in one fiscal year.

Death Benefits: Cash payment to legal heirs for death due to sickness or nonindustrial accident.

Medical Benefits: To include adequate medical and surgical care, beginning with the first day of disability, whether due to sickness, nonindustrial accident, or to child bearing by the beneficiary or the wife of the beneficiary, and limited to a period of twenty-six weeks in one fiscal year unless the time is extended by the commission.

4. Cost.—Preliminary estimates indicate that the total contributions would not need to exceed 50 cents per week per insured person, that is, employee 25 cents, employer 20 cents and government 5 cents, for a minimum of benefits of $7 per week for disability beginning after the first week, $200 for death, and adequate medical and surgical care.

5. Administration.—All matters of promulgation of rules and regulations and appeals should be vested in a commission created for this purpose.

Subject to appeal to the commission, all executive authority should be vested in a director appointed for this purpose.

Subject to appeal to the director, all medical benefits should be under the supervision of the medical director who should be closely related to the health department.

All matters of local administration should be vested in local boards of directors which should be federated according to districts, in order to lower the costs and increase the efficiency of local administration. All local and federated bodies should be subject to supervision by the central authorities, and also subject to the rules and regulations promulgated by the commission.

The commission and all local and federated boards should be composed of persons representing the contributors to the funds. The number representing employees and employers should be in the same ratio as their respective contributions.

Provision should be made for free choice of any physician registered on the local panel, and all persons licensed under the laws to practice medicine should be allowed to register on the panels. But the number selecting any one physician should be limited.

Relation to the Medical Profession.—Without adequate medical benefits, both clinical and preventive, the whole plan will prove a failure.

These benefits should provide adequate medical and surgical relief, including specialist and dental services, medicines and appliances in home, hospital, or office, as the case may require, for all disability as provided under the law or regulation.

To provide these benefits there should be a corps of all-time medical officers and nurses, and local panels of physicians, specialists, dentists and druggists to provide such relief as may be authorized by the annual contract.

Corps of All-Time Medical and Health Officers.—The officers of the medical corps should be carefully selected, and after a probationary period of satisfactory service, given a life appointment subject to dismissal for inefficiency or immoral conduct.

In the federal plan the medical officers should be detailed from the present United States Public Health Service.

In the state plan a medical corps should be created along the same plans as the present commissioned corps of the Public Health Service and the state health department reorganized on such plans as would provide an efficient supervision of the medical benefits.

The duties of the medical corps under federal or state plan should be to have charge of all hospital and dispensary relief; to examine all insured persons claiming to be disabled, and issue certificates in accordance with the regulations promulgated by the commission; to advise the administrative authorities and all contributors to the funds as to the best measures for the relief and prevention of sickness; to advise with the physicians attending sick members as to measures which will shorten the periods of disability; and to perform such other duties as may be fixed by regulations. The corps of nurses should be selected and appointed in the same manner as the medical corps, and should aid the medical corps in all of the duties required of it.

The further duty of visiting and nursing disabled members in their homes should be imposed on the nurse corps under the direction of the attending physician or visiting board of the funds, as the case may be, but always under the supervision and approval of the medical corps.

Panels of Physicians, Specialists, Dentists and Druggists.—In every local or federated jurisdiction, panels of physicians, specialists, dentists, and druggists should be contracted with to furnish adequate services to all insured persons who prefer to be treated in their home or in private office.

These contracts should, by preference, be made through the medical societies and all the administrative details left to the societies, but strict provision should be made that any person, licensed under the state laws as competent to perform the services specified, must be allowed to register on the specified panels without regard to the particular school said person may have graduated from.

Each insured person should have the privilege of making his own choice of physician from among those registered on the panel for his district. This choice should be allowed once each year, or oftener if some good reason is furnished. The number choosing the same physician should be limited to such extent as will insure adequate service on the part of the physician.

Payment for services should be made on a per capita basis and each physician should receive the same annual amount per patient whether the patient is sick or well. At the end of each month or quarter the physician should receive pay in accordance with the number of insured who had selected him.

The same methods of capitation payment and selection should be provided for dentists and druggists.

This method of payment and selection should prove to be for the best interests of all concerned. Those rendering services or selling medicines and appliances should receive the same capitation fee and there would be no incentive to render excessive services or furnish excessive supplies of medicines or appliances in order to increase their income. On the other hand, the fact that the patient has the right to change his choice would be incentive sufficient to make those chosen do their best to please.

There will be a further inducement to render efficient service to all patients in the fact that an officer of the medical corps will have to see every disabled member as often as may be necessary to keep informed as to his disability, in order to issue the certificate required. This double medical examination would not only increase the efficiency of the treatment, but would prevent malingering, as it is not apt to be successful under the double examination and observation.

Hospitals and Dispensaries.—As rapidly as possible local boards of directors should be federated according to the most favorable districts so as to build, buy, or contract with, hospitals and dispensaries for the care of its disabled members. These should be placed in charge of the medical corps and contracts be made for such special services as may be required. Any patient should be admitted to hospital or dispensary treatment on the approval of a regular medical officer, but the amount of the capitation paid to any doctor or druggist for any person so admitted should not be reduced because of such admission.

Visiting Boards.—To further insure that every beneficiary received just treatment and none be allowed benefits to which he is not entitled, provision should be made for the organization of visiting boards composed of insured persons whose duty should be to keep in touch with each disabled member until he has recovered. These visiting boards should also keep in touch with the medical officers and visiting nurses on duty in their district.

THE POSSIBILITIES OF SUCH A SYSTEM

Of course, it is borne in mind that a system of sickness insurance such as has been outlined should be evolved through federal or state legislation, or both, and that starting in a limited field it could be gradually extended and perfected. But the beginnings of a cooperative governmental system should be made as soon as possible with the object in view that each one of the 30,000,000 workers in the United States should eventually receive adequate medical and surgical care.

With adequate financial relief when unemployed on account of sickness, he would be able to take advantage of the treatment before it was too late.

There would be funds with which to build or buy hospitals in every federated district. These hospitals would be in the reach of all and form part of the benefits to which all would be entitled.

The treatment in the homes would have to be of the best, or the patient would be sent to the hospital. Minor ailments, many of which now go uncared for because of the expense, would receive prompt attention in office or dispensary. Physicians would no doubt institute thorough, periodic examinations of the physical conditions of their clientele, knowing that such examinations would often save their patients from many serious troubles.

Visiting nurses and visiting boards would find in homes many conditions which needed correction to save future trouble. The all-time medical officers would enter the homes of all sick members and with the trained eye of the sanitarian would find many causes of disease which need correction.

Health departments would not have to spend time in lobbying to obtain proper laws and appropriations. Instead, business men, on finding that they were paying for much disease that could be prevented, would see to it that the health authorities were efficient and effective in the work of disease prevention.

PHYSICIANS ARE NOW HANDICAPPED

At present medical practice in the United States is operating on a most uneconomical and unsocial basis. The man on the average income of industrial workers cannot afford to pay the charges for the average sickness expectancy. Among these the physicians are practicing against heavy odds.

A large number of low-paid wage earners and members of their families constitute the "charity practice" of physicians, and many of them are found in the free hospitals and clinics where physicians give their services free; and many more, too proud to ask for charity treatment, either get no treatment at all, treatment too long delayed, or treatment of dubious value from quacks, "patent medicine" men, druggists, and ignorant midwives.

In medical centers large free hospitals are maintained for certain patients called hospital patients, while other patients must go without treatment and many of the hospital patients do not apply for admission because they cannot afford to stop work.

Outside of medical centers there are many large areas which have few or no physicians, because the people are too poor to employ them.

For the most part, throughout the United States hospital accommodations are far from adequate.

The results of this lack of treatment or improper treatment of the poorly paid workers is that many die every year who could be saved, untold numbers become permanently disabled and unable to work, their wives become invalids from no care or improper care during confinement, and thousands of their children die within the first year of life from lack of intelligent care, or become blind, or are otherwise handicapped.

SICKNESS INSURANCE A HEALTH MEASURE

A governmental system of sickness insurance similar to those in successful operation in Europe will enable the physician to receive pay for his practice and hospital work among low-paid wage-earners, and will allow the patient to receive prompt and proper treatment without forcing him to become a "ward of charity." It will strengthen the economic independence of the worker and at the same time greatly increase and stabilize the income of the physician, as well as enable the medical profession to carry on a more effective preventive work.

The waste from disability and death due to preventable disease is so tremendous that estimates mean nothing to the average mind. The suffering and sorrow due to these causes should be sufficient argument for a sickness insurance law which will place adequate medical relief within the reach of all and provide for preventive measures on a broad and comprehensive plan in which there will be a financial incentive for employers, employees, physicians, and the community to prevent sickness. Such a law would prove to be the greatest public-health measure ever enacted.

DISCUSSION

ON PAPERS OF DRS. MCCURDY, SNOW AND WARREN

MR. FREDERICK L. HOFFMAN, Newark, N. J.: Any plan of national or state sickness insurance is and ever will be primarily a medical question. It matters very little as to how the end is achieved to those who are or will be the beneficiaries of the plan. It matters very little whether it is done by insurance, or whether it is done through the taxing power of the state. I believe that those who are responsible for the English national insurance scheme, if they could have their way and go over the ground again, would not call it an insurance scheme at all, but a national public health service. If we are really sound in our democracy, that the interest of every individual is a matter of government concern, as regards health and longevity, strength and efficiency, then I believe it goes without saying that sooner or later we shall adopt a rational and effective method to carry such an idea as that of Dr. Warren and others into effect. At the present time an enormous amount of ill health exists in the community in that latent, incipient form, when there is the greatest reluctance to seek advice, although there is then the greatest possibility of real prevention and of genuine cure. That reluctance is, of course, due largely, if not entirely, to economic reasons—to the unwillingness or the inability on the part of a large number of wage earners (and with these we are chiefly concerned) and their dependents, to incur the initial expense. It has been said—and I believe it is true—that the majority of our wage workers have not a single week's wages ahead. Now, if that is true, and if that amounts to $10 or $15, you can see how narrow the margin is between economic dependence and economic independence. If the state, or if insurance companies and societies, can induce the wage earner, however, to set aside a very small portion of his wages, so small that he would not feel it at all, that amount stretched over the course of his life and accumulated at compound interest will, broadly speaking, prove fully sufficient to provide for him and his dependents adequate medical treatment, adequate surgical treatment, adequate medical inspection, and other means for the prevention of illness as well as its cure. Unfortunately, whenever you approach a wage earner with so remote a contingency as sickness (for it is remote, broadly speaking, in the life of the large majority of that proportion of our wage earners who are mostly under 30 years of age), they are, as a rule, unwilling to make that present, though small, pecuniary sacrifice; and in the European countries, at least, compulsion has been the only alternative to a really universal and thoroughly effective system of what we call social insurance, but what really amounts to a system of state medicine. They call it insurance, but nothing is insurance in the true sense that rests on compulsion, on the one hand, and on a state or an employer's contribution, on the other. It is simply a modified form of taxation; and if we are going to have anything of that sort in this country, we must face it from that point of view. I should like to leave that thought with you, for it is of the utmost importance that there should be no confusion of terms.

DR. GEORGE M. KOBER, Washington, D. C.: The importance of the subject of industrial sanitation must be apparent when it is remembered that probably more than one third of the population in this country constitute our working classes. Health is the chief asset of the working man, and no greater calamity can befall him than when, by reason of sickness or accident, his earning capacity ceases. It means in many instances the utter financial ruin of the family and is doubtless one of the most potent causes of poverty and distress. An appeal has been made by Dr. McCurdy for an enlightened and humane interest in this important and much neglected subject. There has been need for it ever since the mechanical industries sprang into existence; and it is much to our shame that we have been so tardy to realize the imperative need for active preventive work in connection with industrial diseases and accidents. I certainly hope that the papers that have been presented will make a deep and lasting impression, and enroll into the ranks of workers in industrial sanitation a large number of able and faithful and intelligent men and women for the prevention of needless suffering and distress. I merely want to point out that of the 143,000 deaths from tuberculosis which were recorded in the census of 1913, probably more than one half belong to the industrial workers; and it has been estimated that fully one half of all these lives could have been saved by the enactment and enforcement of laws for the prevention and removal of dust and fumes, which constitute the foes of industrial life. That is only one of the many instances that can be cited in favor of active preventive measures. Time does not permit me to speak of many other factors connected with this great problem, such as industrial poisons, fatigue from overwork and long hours, the question of temperature and atmospheric conditions. One of the most important conditions is reasonable hours of work. How can we expect men to work day after day and month after month and year after year without wearing themselves out, as long as the hours amount to ten, eleven and twelve as we very frequently find in our steel plants, where they are exposed not only to extreme, hard physical work, but also to excessive heat and other avoidable conditions detrimental to health and life?

DR. R. W. CORWIN, Pueblo, Colo.: Our work must extend further than examination of the man in the mill. His home surroundings should be considered. If possible he should be freed from anxiety, insanitary and unhygienic conditions.

Our attention should be called also to the matter of education. Not only should the employee be instructed, but those above him in authority. The doctor learns new prophylactic facts every day. All others may do the same.

We hear much regarding the use and abuse of tobacco and liquor. No person in authority can ask one under him not to do what he himself indulges in. One cannot expect of his assistants more than he is willing to do himself.

DR. G. H. RICHARDSON, San Francisco: For the past two or three years, as a member of the Commonwealth Club of this city, I have been studying the various phases of social insurance, and have become very much interested in this subject, particularly as it relates to our profession. I want to bring out one point that was brought to my mind by Dr. McCurdy's paper on the physical examination of employees. I examine for the Civil Service Commission of San Francisco and of course make a large number of rejections, but I have kept no record of these rejections. All over the United States these examinations are being made, and it would be of great service to compile these rejections. The statistics would, I am sure, be of some service to this section. The same thing I know exists in the recruiting depots of the army, the navy and of the marine service. We have no easy way of knowing the character of the defects giving rise to their rejections, the proportion of men rejected, or most important of all, the ultimate result of these defects on the earning capacity of the individual. It would seem that if they were collected by this section in some proper manner, it would be of value to us in this work. The dark war cloud that now rests over Europe will practically socialize that continent. It is going to make poverty such as the world has never seen, and in consequence the various countries will have to tax themselves, probably by some form of compulsory insurance, to care for their great dependent populations. We must expect that this transition in economic life will affect conditions in the United States; and we as medical men should study and prepare ourselves for the wonderful change it will make on our profession as a means of livelihood and also on our relations to the sick and injured of our community.

DR. G. H. TAUBLES, San Francisco: With reference to the paper of Dr. Snow, one of the strong things brought up but not elaborated was the instance of enormous numbers of girls living under most distressing conditions; and, on the other hand, the statistics of men infected with venereal diseases, most of them unmarried. I think that this is the age of the awakening of the civic conscience, and this condition is one that requires readjustment. The mass of people cannot be deprived of their biologic heritage by the isolation

of large numbers under unsuited conditions, causing many of those women to pass through their lives without ever having completed their functions of motherhood, by ruining so many of these men so that they never will have completed their functions of fatherhood. This thing in time must have a serious effect on the entire population. The hopeful thing is that such a section as that of preventive medicine has sprung into existence, and it is from the social aspect that preventive medicine will have its strongest effect. That readjustment must take place, and the reestablishment of human beings as biologic functioning organisms must take place, and that is social. This is going to be emphasized, particularly at this time, in view of the enormous destruction of life occurring in Europe; and the problem will be presented to us in the United States from the point of view of immigration. We will have many hundreds of thousands of people to take care of directly, and hundreds of thousands to take care of indirectly. The United States has always sent a great portion of its natural products to other continents. This will be more than ever the case in the next decades.

DR. W. C. RUCKER, Washington, D. C.: Dr. McCurdy spoke of the question of overloading the human machine. Years ago the reports of the Marine Hospital Service were filled with references to aneurysm among sailors, which was then very common. Nowadays aneurysms are almost never found among sailors. This is coincident with the substitution of gasoline and steam power on ships in place of man power for the purpose of hoisting sails, moving boats, warping in vessels, and everything of the kind. I believe this has reduced aneurysm among sailors, and that what applies to this one craft applies to all others.

With regard to the examination of applicants for positions, on two occasions I have been entrusted with the employment of large numbers of men, and, like everyone who has done this sort of work, I have observed the very close relation between the physical and mental development of men; but there is a type of men physically sound and apparently fairly sound mentally who nevertheless have a mental strabismus. In the employment of men, the exclusion of such applicants is most important. They are invariably trouble makers, a danger to fellow workers and cost a great deal more than they are worth. The simple test of the imagination is one of the best tests for the exclusion of these men, as they invariably have a disordered imagination. If you present to them a sudden emergency requiring the exercise of the imagination you will be surprised at the queer and eccentric answers you will get; and whenever you find men with these queer imaginations it is not wise to employ them. For the common laborer, the man who is supposed to bring a little brain and a great deal of muscle to his job, a blot makes a very good imagination test. Simply take your pen and put some ink on a piece of paper, fold it and unfold it again, and, pointing to the blot, say to the man, "What does it make you think of?" That sounds like an idiotic test, but it is really a sensible test for these men. They will display emotional characteristics under this stimulus to their imagination. Here is a blot that looks to a normal eye like a cloud, and the man is apt to say, "Oh, that looks like a brainstorm. Take it away"—something like that. You will find it a good test.

I have told these things to bring out the importance of the test of the mental condition of workmen, of which nothing was said in the papers. The importance of such a test is illustrated by the case of a man, employed as a boatman running a small gasoline craft, who suddenly began to hit things, bumping into the wharf and injuring his boat. His friends and his employers noticed it, but paid little attention to it. Within a year he had general paresis.

A good many railroad accidents have been due to the fact that the men were in the stages of mental deterioration. I think in our routine physical examination of employees we should pay great attention to their mental condition.

DR. LEO MUNTER, San Francisco: The proposition of sickness and accident insurance I believe to be dangerous and bad. The matter of industrial insurance as we have it in San Francisco has proved to be a bad proposition. At the time when the insurance act first went into effect there were compacts made between physicians of San Francisco and various parts of the state with the insurance companies, whereby the physician was to furnish his services at a minimum fee. The argument was made that industrial insurance was to protect a class of men who were making small wages, who were not earning sufficient to protect themselves in case of accident, and for that reason the medical men were asked to make their fees as low as possible. The argument was also made by the insurance companies and by the industrial accident commission that as we ordinarily charged low fees to these men, we should not charge the insurance companies larger fees for the services rendered. As a result, the association of insurance companies adopted a schedule, which was all the way from 50 to 60 per cent. lower than the regular fees that had been charged for medical services. A great many physicians were requested to sign this schedule and pledge themselves to work for these fees. A great many physicians of San Francisco, to my own personal knowledge, did sign this schedule and agreed to do the work for this minimum fee. At a meeting of the State Medical Society a fee schedule was adopted which was to be ratified by the various county societies, and which was rejected by various county societies. In San Francisco a mass meeting was held which resulted in a protest against binding ourselves to work for low wages. As a result of this protest, the insurance companies have taken it on themselves to dictate who the physician shall be who shall treat the injured employees. They have employed physicians at certain reduced fees, and have made contracts with physicians who would still further reduce their fees by giving a rebate of 25 to 30 per cent. off of the schedule which had already been reduced 50 to 60 per cent.

DR. MARY LAWSON NEFF, Phoenix, Ariz.: I have been asked to speak on the psychologic aspect of the question. I examined in Los Angeles a few days ago with Dr. Allen a man, a jitney-bus driver, who had been arrested for charging at full speed into another automobile. He proved to be a paretic, and from time to time in different clinics I have seen many such cases. I believe if we collected them we would find an immense number of industrial accidents due to mental and nervous diseases. I think also the question of mental defect should be given attention. The high-grade mental defective is not recognizable except by a mental examination, and not always then; but a great many mentally defective people find their way into industrial positions that they are quite unfit for. The high-grade defective, for instance, is quite capable of working in a gang under a good foreman, but is incapable of working independently; and his right placing would depend on the proper psychologic examination, rather than the physical; that is, there are special defects that should be made the subject matter of psychologic work. For instance, a person with a "left hand lag" ought not to attempt to be a stenographer. The person who is "ear-minded" is unsuitable for a telephone operator where a flash light signal is what she has to depend on for her work. So it seems to me that there is a large field for the psychologist—the psychologist with common sense—in this department.

DR. OTTO P. GEIER, Cincinnati: I believe that this sort of work if well done in industry is going to stimulate the general practitioner to better work, more accurate diagnosis. I find that we are continually coming across, as Dr. McCurdy does, the mistakes and oversights in diagnosis on the part of the general practitioner; and after a while, when enough of this work has been done, it is going to become a very uncomfortable thing for the general practitioner to remain so slovenly in his diagnosis, and have his families find out from the industrial physician that he does not know his business. It might surprise you to know that there have come before me, with only 1,000 men, three cases of appendicitis within the last six weeks, and two cases of tuberculosis. Those conditions we discover by virtue of the fact that medical inspection is insisted on, and because these men come freely to consult me just as they did their private physicians.

That matter then of the jacking up of the family physician, and making the general practitioner do less slovenly diagnostic work, I think, is going to be of some value.

It is also going to help the man who is interested in public health work. If he is interested in a larger budget for the health department, he should be interested in this thing, because if the people seize the idea that it pays to be healthy, they are going to see to it that the public bodies give the public health department more money. In that way it is going to stimulate better health conditions in our cities.

It is a question whether industries should undertake to do surgical work and medical service for its employees such as suggested by Dr. McCurdy, because I think there is a little danger of pauperization; and I think we should steer very clear of this danger. That of course should take care of itself by the inquiry into every man's social condition. If he deserves it, give to him out of your industrial clinic the same service you give in the general public clinic. In order to make this propaganda go with the profession we must steer clear of robbing the physician of his just part of medical and surgical service.

DR. SIDNEY M. MCCURDY, Youngstown, Ohio: It seems to me that a section on preventive medicine has a duty to perform in supporting the physical examination of employees. The only active opponents that I can discover are the labor unions and they seem to be undergoing a change of sentiment. We should help educate them to the fact that the examination is for honest purposes, and that no one will in the end profit more than the workingman.

The question of psychology and its relation to a working force, I am much pleased to have brought out by Dr. Rucker. Our accident department finds that it can only prevent 35 to 40 per cent. of accidents by mechanical devices, the rest probably belonging to the individual and to his psychologic attitude. I have spent much thought and time in the endeavor to discover an accurate and rapid test for recording the mental condition of applicants for employment. Thus far I have not felt satisfied that any practical tests have been evolved.

Lastly, I wish to thank Dr. Warren for his most able paper on insurance. I do not think that there will be any opposition from the employee when state insurance becomes necessary. We have a relief association, not compulsory, to which 5,600 of our 8,000 men belong. This would seem to indicate that the men appreciate the need of insurance and there is a real desire and necessity for a cheap form of protection. I am a firm believer that while the medical fraternity may suffer a diminution in the size of its fees, for the ultimate good of society, state and national insurance for sickness and old age is the only logical solution of this problem.

DR. W. F. SNOW, New York: The purpose of offering my paper was to bring out, if possible, that there are moral and social hazards in industry as well as health hazards; and that the complicated interlocking of such hazards with those that we technically know as health hazards, makes it possible to attack some diseases in the reduction of their prevalence rather by an attack on these moral and social hazards than directly on the health hazards. Venereal diseases are in this way sufficiently closely related to industry to demand close observation on the part of those working with health hazards in occupations.

DR. JOHN W. KERR, Washington, D. C.: Much more might be said on this subject. Its importance to the medical profession has been brought out this morning. I would just like to emphasize its importance in relation to the public health movement; but I feel that health departments should be in closer touch, and that in future plans the work should be placed so far as possible in the hands of health departments. [In order to give practical effect to the resolution already adopted Dr. Kerr moved that a committee be appointed for the further consideration of this subject, to report at the next annual meeting. This motion carried.]

THE ROENTGENOGRAPHIC APPEARANCES IN RICKETS

WITH A COMMENT ON DIFFERENTIAL DIAGNOSIS *

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During the past winter between 6,000 and 7,000 roentgenograms from the records of the Children's Hospital were examined for the purpose of selecting from among them the plates of rickets, of which there were found between 500 and 600. These were set apart for a study which forms the basis of this paper. This ratio of 10 per cent. of rickets in the cases requiring roentgenographic study in the varied clinics of a children's hospital is of interest. The plates of the general group covered cases of all types of trauma, congenital bone malformations, tuberculosis, scoliosis, osteomyelitis, empyema, scorbutus, osteomalacia, chondrodystrophia and syphilis.

Fig. 1.—Acute rickets. First stage: indistinct epiphyses, periosteal thickening, fractures.

The plates of rickets were then carefully gone over several times from two points of view, (1) to establish and classify the Roentgen appearances of the acute, subacute and convalescent phases of the affection, and to define the finer bone changes associated with the disease, and (2) to determine definitely those points in differential diagnosis by which rickets might be distinguished from such diseases as osteomalacia, scurvy, congenital syphilis and similar affections.

The research was originally undertaken to see if it was possible to determine from roentgenograms when the rachitic process had subsided sufficiently to make operative interference advisable in cases of knock knee and bow leg. Experience had shown that such a determination by age limit was unsatisfactory, because even when children are 4 and 5 years old, one sometimes encounters soft bone offering little resistance to the osteotome, and in these cases profuse bleeding often results, suggesting that the rachitic process is still active.

The study of the plates, however, proved so interesting with regard to the broader aspects of the disease that the inquiry enlarged itself into a comprehensive investigation of the Roentgen-ray phenomena of the disease in general. A review of the literature proved that apparently such a survey was covering practically new territory.

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* From the Orthopedic Clinic of the Children's Hospital.

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Fraenkel and Lorey have contributed interesting material from which a Roentgen diagnosis of typical deformities can be made, but the finer aspects as to differential diagnosis are not given, nor is there any attempt to trace the stages of the disease through a definite Roentgen sequence.

Von Recklinghausen's[2] study of pathology adds certain substantiating data to the roentgenologic evidences of the disease. Koch's[3] work from the experimental biologic aspect of etiology is familiar in the recent current literature on the subject.

There have been numerous French articles[4] dealing with the relation of rickets and syphilis, but as the literature in general does not bear directly on the aspect of the question under consideration, this paper will consist almost wholly of my own observations and conclusions.

Fig. 2.—Knee in acute rickets, showing indistinct epiphyses and ragged diaphyseal ends with blocking off of lower end of shaft.

On a comparative study of the plates, the disease divided itself naturally into three stages, stages in which the separation must of course be to some extent arbitrary, but which, on the whole, are distinct. These apparently correspond to three stages based on anatomic pathologic data advocated by Guérin and Monti[5] as the stages of swelling and rarefaction, deformity and organization, healing and reparative eburnation.

For this investigation, the knee was chosen as the most favorable joint for study. The manifestations, however, are similar in other joints.

FIRST STAGE

In the first stage there are two types, which differ in severity. This stage is the early period of the disease, the period of onset and acute metabolic disturbance. In the *milder* type, the ends of the diaphysis become frayed out instead of clear cut, and the epiphysis casts little or no shadow, while the center of ossification is small or absent, and at times appears multiple. The whole joint is surrounded by a hazy cloud, and the diaphysis on the whole contains less lime than normal. This is very marked in the juxta-epiphyseal region. Up to this point deformities have not begun.

In the *severer* type of the first stage, the epiphyseal appearances are similar, but more marked. In the diaphysis, severe general bone atrophy exists, and there is pronounced periosteal thickening, associated as a rule with fracture of the bones, most often in the arms. These cases of multiple fracture are very common, and are frequently classed as osteogenesis imperfecta, an affection wholly different in character. Fraenkel and Lorey use the terms "florida" and "gravissima" in connection with these severer manifestations.

SECOND STAGE

In the second stage, the shadow of the epiphysis becomes more marked. The area is ragged and irregular about the margin, and calcification is more marked at some points than others, which results in a characteristic mottled appearance. The ends of the diaphysis begin to broaden, especially on the side on which the strain is greatest, which produces a ledge or lip next to the epiphyseal line. In bow legs this is found on the inner side of both the tibia and femur, and in knock knee on the outer side of the same bones. This is the beginning of compensatory changes in the bone structure, which from all appearances are related to weight bearing.

Fig. 3.—Second stage: epiphyses more ossified, ends of bones broadening, more marked on the side on which the strain is greater.

The diaphysis in the second stage begins to give a more definite shadow. The region next to the epiphysis is streaked longitudinally, and is the area of maximum disturbance. At the epiphyseal end of the shaft there is generally a transverse area of increased density reaching about a quarter or a half an inch from the epiphyseal line, bounded at the end furthest from the joint by a fairly sharp line. This continues into the third stage, in which it may become more defined, and resembles in many respects similar changes observed in syphilitic bones in infants, described as osteochondritis, a point discussed under differential diagnosis.

At the end of the diaphysis next to the epiphyseal line there often appears in the late second or early third stage a clear transverse white line, showing an increased deposit of lime in the lower end of the shaft. This is apparently not to be distinguished from the "white line" which is described as a charac-

1. Fränkel, Eugen, and Lorey, Alexander: Die Rachitis im Roentgenbild, 1910.
2. Von Recklinghausen: Rachitis and Osteomalacia, 1910.
3. Koch, J.: Ueber Experimentelle Rachitis, Berl. klin. Wchnschr., 1914.
4. Dufour, H., and Huber, J.: Syphilis et rachitism, Ann. de méd. et chir. inf., xiv, 702. Kassowitz, M.: Ueber Rachitis, II, Osteochondritis rachitica, Jahrb. f. Kinderh., 1912, lxxv, 194, 334, 489, 581.
5. Monti: Rachitis, Kinderheilkunde in Einzeldarstellungen, 1900, ii.

teristic of scurvy, but which is equally characteristic of rickets.[6]

Along the shaft of the long bones a longitudinal change occurs, which is compensatory in nature. This consists in a cortical thickening on the concave side of the bones, chiefly noticeable in bones which have curved. This change is of endosteal origin, and persists into the cured stage of the affection. It is constant in curved bones, and is one of the most important characteristics in differential diagnosis.

Fig. 4.—Second stage of rickets, showing returning ossification. Note "white line" at ends of diaphyses described as characteristic of scurvy; chambering of lower part of femur.

Further changes in the second stage consist in chambering of the interior of the bone, where light areas in the shaft indicate the absence of marked bone deposit, and heavier lines of ossification show the irregular development of trabeculae. The smooth homogeneous shadow of normal bone is replaced by an irregularly streaked shadow structure.

The second stage in general is a period of systemic reaction to the disease, in which signs of returning ossification occur and when deformity begins.

THIRD STAGE

In the third stage, the epiphysis begins to resume its normal contour and homogeneous shadow density. Irregularities persist in the marginal outline, and there is still a little mottling in the ossification. The lipping of the diaphysis has enlarged the bone ends, and there is in consequence a discrepancy in breadth between the diameters of the diaphysis near the epiphyseal line and the epiphysis. This relative difference in size is characteristic of this disease. The clouded condition surrounding the joint in the earlier stages has gradually cleared away, and the bone shadows are more definite in consequence. The white line mentioned in the second stage becomes more pronounced in the third.

The other general changes are greater definiteness in the bone shadow throughout the shaft as well as in the joint, and the accentuation of the compensatory thickening of the shaft on the concave side of the curvature. Though irregularities in the bone shadow continue, they are much less marked than in previous stages. In the plates so far observed, the lower epiphysis of the femur seems to be the last to recover its normal outline; but a more extended general study would be required to establish this.

The third stage is what may be termed the period of convalescence. From this point on, the deposit of bone continues, the outline of the epiphysis becomes clean cut, and the epiphyseal shadows homogeneous and rather more than normally dense, and irregularities in deposition in the interior of the shaft become less marked.

The characteristics of recently cured rickets are the enlargement of the diaphyseal end, which is not gradual but is a sudden lipping or ledging next to the epiphysis, the relative disproportion between the diaphyseal end and the epiphysis, and the cortical thickening on the concave side of the bone.

For diagnostic purposes, therefore, the changes may be summarized as follows: The epiphyses show scanty and irregular osseous deposit, and never have a clear normal outline during the acute process. The end of the shaft is streaked, and presents an irregular line at the joint end and above it a curious transverse zone of different structure from the rest of the bone. The interior of the shaft becomes chambered and irregular, and the whole shaft casts less shadow than normal. The ends of the shaft broaden at the junction with

Fig. 5.—Third stage of rickets: clear and ossified epiphyses, curved bones with compensatory thickening on concave side of curve, broadened ends of shaft at epiphyseal line, increased density of bone.

6. Talbot, Dodd and Peterson: Experimental Scorbutus and the Roentgen-Ray Diagnosis of Scorbutus, Boston Med. and Surg. Jour., Aug. 14, 1913.

the epiphysis, and throw out ledges on the side when strain is to be met. A compensatory cortical thickening occurs on the concave side of curved long bones.

DIFFERENTIAL DIAGNOSIS

In cases of scurvy, the roentgenograms show the clear outline of the epiphysis. Even in cases in which extensive subperiosteal hemorrhage exists, with the attendant bone atrophy of the shaft and occasional dislocation of the epiphysis, the outline of the latter is quite distinct. Atrophy in scorbutic cases, though at times extreme, is uniform. The one point which is common to the two diseases in some cases is the white line occurring at the ends of the diaphyses. On the condition of the epiphysis alone, however, it appears possible to differentiate the two diseases.

In chondrodystrophia foetalis, the epiphysis is perfectly constant in maintaining its clearness and regularity of outline throughout the affection, and though the ends of the diaphyses are broadened, the changes occurring in this region in rickets, which have already been outlined, distinguish this part of the skeleton from chondrodystrophic deformities, which present comparatively uniform shadow densities.

In hereditary osteogenesis imperfecta, one typical hereditary case has been studied very carefully through a period of eight years. During that time there has never been any epiphyseal abnormality or disturbance in ossification at the ends of the diaphysis or elsewhere in the bones, although the Roentgen shadow of the bones is less dense than normal.

The differential diagnosis between congenital syphilis and rickets from Roentgen-ray appearances is at once the most uncertain and interesting part of this comparative Roentgen study. In this connection an extended study of plates of congenital syphilis was made, a study in which I had the invaluable help of my colleague, Prof. Abner Post.

In children old enough to have acquired rickets, that is, in cases in which the question of differential diagnosis between these two conditions might arise, the epiphyses are far enough advanced in their development to be the focal point in the diagnosis. The outline of the epiphysis in syphilitic cases is clear and not seriously disturbed as in rickets. The appearance at the epiphyseal ends of the diaphysis of the zone of bone modification known as osteochondritis in syphilis, as has been said, is similar in appearance to the characteristic diaphyseal change in rickets. In the latter, however, there is in addition to the absence or cloudiness of the epiphysis a marked enveloping cloudiness of the joint. The time of the occurrence of this modification of the end of the shaft is also widely different. In syphilis it is recorded chiefly in the fetus and the new-born, and of its later history we know practically nothing. In rickets it occurs in the first dentition. Extensive periosteal disturbance is common to the two diseases. In the severe type of acute rickets in children with no syphilitic history or signs of syphilis, with a negative Wassermann reaction, severe periosteal thickening, very frequently associated with fracture, is found. Such periosteal disturbance diminishes with the progress of the disease, and shows no tendency to bone formation such as is the case in the periostitis ossificans of syphilis. Moreover, fractures are rare in syphilitic infants. In the metacarpal bones this periosteal thickening is sometimes present in rickets presenting Roentgen-ray appearances of dacty-

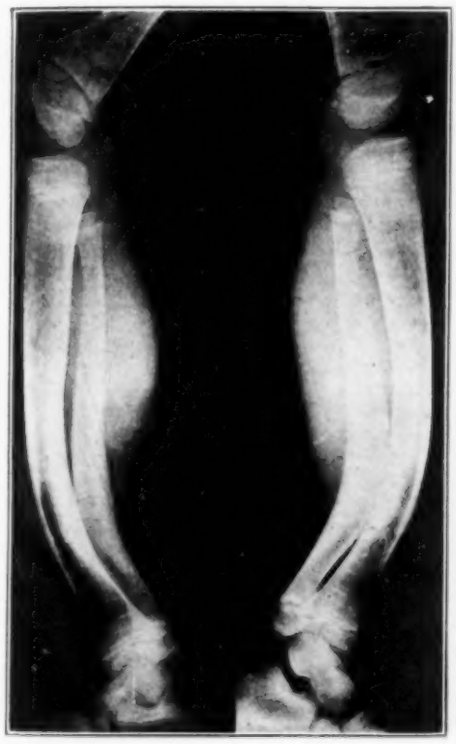

Fig. 6.—Side view of anterior tibial curve due to rickets; thickening is on concave side of curve.

Fig. 7.—Side view of anterior tibial curve due to syphilis; thickening is on convex side of curve.

Fig. 8.—Side view of leg bones in congenital syphilis, showing periosteal thickening, but distinct epiphyses. (After Fraenkel.)

litis, a subject now under investigation for future report.

The irregularities in the medullary shadow of the shaft in syphilis are due to irregular increases in density. The irregularities in rickets are related primarily to diminished density. In the later stages of both diseases the occurrence of cortical thickening is highly differential. In rickets the thickening is endosteal

Fig. 9.—Osteogenesis imperfecta. Hereditary case under observation nine years.

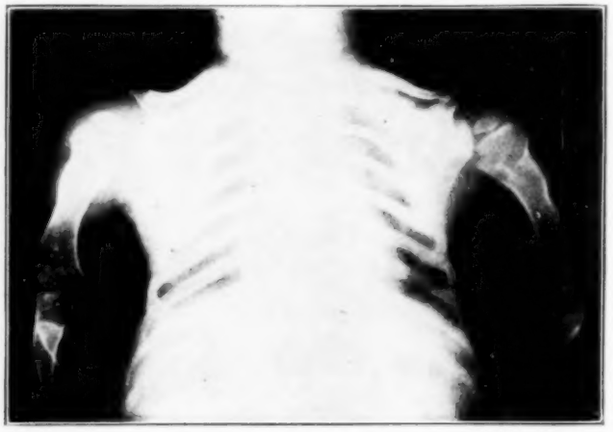

Fig. 10.—Chondrodystrophia foetalis. Broadening of ends of shaft, but distinct epiphyses.

in origin, and is always on the concave side of the curve, while in syphilis the thickening is periosteal or osteoperiosteal, and is very uniformly on the convex side of the curve, resulting in the lower leg in the characteristic "saber tibia." This thickening in syphilis may occur on both sides, however. Further differential study of the two diseases is demanded, because they not infrequently exist in the same patient.

Fig. 11.—Osteomalacia, showing absence of disturbance in epiphyses or epiphyseal region.

Fig. 12.—Scurvy, showing bone atrophy, "white line" and periosteal disturbances in shaft, but no trouble in epiphyseal regions.

SUMMARY

In rickets, constant changes are to be found while the disease is active, and are located most markedly in the epiphysis and the epiphyseal end of the shaft; but they also involve the shaft. The most important of these changes are (1) delayed ossification and indistinctness of the epiphysis, (2) fraying out of the end of the shaft next to the epiphyseal line, (3) broadening of the end of the shaft next to the epiphyses, (4) cortical thickening on the concave side of curved bones, and (5) areas of diminished density in the bone shadow of the shaft.

Periosteal thickening and multiple fractures often occur in the acute stage of the disease.

234 Marlborough Street.

ABSTRACT OF DISCUSSION

DR. HENRY W. FRAUENTHAL, New York: I know I am expressing the opinion of the gentlemen present that Dr. Lovett has given us a most scientific differential diagnosis of the various stages of rickets. But it is most difficult to differentiate between the late rickets and syphilis in our roentgenograms. I expect on my return home to review the plates taken at the Hospital for Deformities and Joint Diseases with added light from this valuable demonstration.

DR. ROLAND MEISENBACH, Buffalo: I should like to ask Dr. Lovett whether he has laid emphasis on the relation between the width of the epiphyseal line and the hardness or softness of the bone. For instance, in using the osteotome in bow legs or knock knees, we frequently find that in the wide and jagged epiphyseal line the deformity usually occurs near the epiphysis and the bone is spongy, whereas, in the deformities which occur farther away from the epiphyseal line the bone is relatively harder. The decision on a point of osteotomy often depends on the roentgenogram, as does also the feeding of the patient. It is interesting to see the changes in the rachitic bones, the effect of feeding, by means of the roentgenogram.

DR. J. T. RUGH, Philadelphia: One thing which Dr. Lovett brought out is highly instructive to me. I do not know whether others have had the same understanding in regard to the deposits of bone in these rachitic cases that Dr. Lovett mentioned. I have always understood and taught that bone was deposited where strain took place just as Dr. Lovett said, and my understanding of the mechanics of these curved bones was that in a bone of this kind—a weight bearing one—the strain did not come on the concave but on the convex side. It is found that in practically all Nature, where there is weight bearing, the strain is on the convexity of the part. This is the part that is stretched. My understanding was that in these bones this was the part which was thickened, and in osteotomy or osteoclasis of these bones, this has been the part that always gave me the greatest amount of resistance with the osteotome. I must say this is a total reversal of my idea, and the Roentgen-ray plates which Dr. Lovett has shown bear out unquestionably his idea. I have seen specimens of bones, however, which

have been classed as rachitic, in which a section showed the thickening to be on the convexity of the curve. Possibly, as Dr. Lovett has mentioned here, they may have been syphilitic bones instead of rachitic.

DR. ROBERT W. LOVETT, Boston: I do not agree with Dr. Rugh's mechanics in this matter. We are considering the question of weight bearing strains and I should suppose that the line of weight would be on the concave side and not on the convex side of the curved tibia.

DR. H. R. ALLEN, Indianapolis: You refer to an operation, in which you have the strap arrangement on the outside.

DR. LOVETT: In regard to Dr. Meisenbach's question, I believe we are operating too early in a good many cases of rickets. I personally do not think any patient should be operated on until the lower epiphysis of the tibia, taking that as a standard, has become rounded with a clear outline. As long as it looks indistinct I think it ought to be left alone. At least, that is my experience. When we do operate too early the bone is likely to bleed profusely and cuts like cheese. As a by-product of this investigation I have come definitely to the conclusion that those cases which Dr. Meisenbach mentions are the ones that make the trouble, and that we ought to study our cases with the Roentgen ray and not operate until the subacute stage of rickets is over and the deposit of bone has begun again, because when they are in the subacute stage bones are very poorly provided with lime and are very soft. I thought that we should have a perfectly clear epiphysis before doing an osteotomy or osteoclasis. The difficult point in the whole investigation is in the confusion with syphilis, and it is going to take hard work and exhaustive study to clear that up. I believe the changes of rickets are definite in character and can be diagnosticated in the presence of syphilis, but even the best syphilographers do not know what becomes of the so-called osteochondritis seen in early life.

PROLONGED AND ACCURATELY TIMED INTRAVENOUS INJECTIONS OF SUGAR

A PRELIMINARY REPORT *

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W. D. SANSUM
AND
RUSSEL M. WILDER
CHICAGO

The study of sugar tolerance and the effects of prolonged uniform injections of glucose by vein, of which this is an abbreviated report, was undertaken primarily for the purpose of perfecting an accurate clinical method for estimating the sugar-using powers of different individuals. It was also anticipated that the data which would be obtained could not fail to have other applications, and that the method employed might be in itself of general interest as a means of studying problems of absorption, metabolism and elimination, and have therapeutic application. Expectations concerning all of these things have been fulfilled.

The study was based on certain prior ideas which were in part original and in part conceptions which had been expressed before by Doyon and DuFort in 1901, and by Blumenthal in 1906. These may be stated briefly:

1. It is at present a common clinical practice to estimate sugar tolerance as the number of grams of glucose which can be given by mouth all at once and just fail to cause glucosuria, and having done so to draw inferences as to the power of the individual to *utilize* glucose. But reflection will show that "tolerance" properly conceived as a measure of the power of the body to utilize glucose must depend on the rate at which the tissues are able to abstract glucose from the blood by their combined powers to burn it, to reduce it into fat or to polymerize it into glycogen. It must be clear that this sum of three chemical velocities cannot be expressed in grams, nor yet in grams of glucose per kilogram of body weight, but that the element of time must be taken into account. *Tolerance must be regarded as a velocity, not as a weight. It must be measured and expressed in grams of glucose per kilogram of body weight per hour of time* or in other convenient units of weight and time.

2. When sugars are administered by the stomach, the length of time during which they are actually brought to the cells must depend on the motor power of the stomach and of the bowel and on the rates at which the sugars can be absorbed; and even when they are given subcutaneously or by any other route which involves absorption as a prelude to their entering the blood, the rates at which they enter the blood will depend on the rates at which they are absorbed. By any of these, but especially by the oral method, the actual rate of entry of sugar into the blood and tissues at large must vary with a wide range of physical, physiologic and pathologic conditions over which we have no control; nor will it ever be possible by such methods to force sugar to enter the blood any faster than it can be absorbed. The rate of sugar absorption is a self-limited thing, for when a certain concentration of sugar is once present in the blood, no quantity given by mouth or subcutaneously or intraperitoneally can raise it higher. In fact, if the concentration of blood sugar is raised above a certain point by intravenous injections, sugar passes out into spaces from which it would ordinarily be picked up, the absorption rate from these spaces then being expressible only as a minus value.

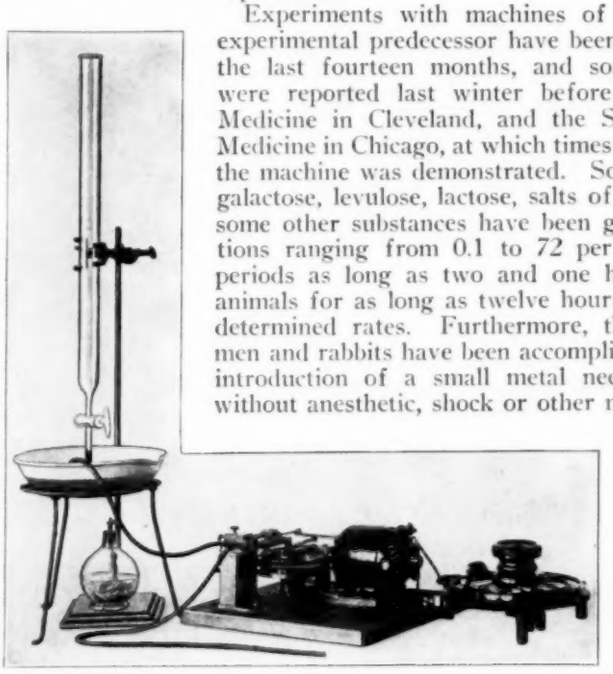
3. *The nearest possible approach to a scientifically accurate method of sugar tolerance measurement must consist in direct intravascular administrations,* since only by this method is the variable factor of absorption rates reduced to a minimum. When sugar is introduced directly into the circulating blood, each tissue receives its share in proportion to its vascularity, and absorption plays no part except as it may be concerned in the transfer of sugar from the local capillary to the perivascular lymph, and the taking up by each individual cell of the sugar with which it is bathed.

4. When glucose is introduced directly into a vein, we should expect different results with different rates of administration. These different effects might be visualized by conceiving the body as made up of clear transparent tissues with blood like water, while the sugar injection is conceived as an injection of some red dye. If the injection is uniform, continuous and not too rapid, we should first see the dye diffuse through the circulating blood, making the veins and arteries stand out in a deeply colored tracery in the otherwise transparent body. Then the color would begin to "run" from the neighborhood of the capillaries, and, diffusing into the cells, would tint them —at first delicately and in some parts more than others as a histologic section absorbs the stain, then deeper and deeper until the whole mass of tissues were

* From the Otho S. A. Sprague Memorial Institute Laboratory for Clinical Research, Rush Medical College.

diffusely colored. *This would take an appreciable time.* Now if the injection is stopped, the color will gradually fade away as the sugar or dye is used up in the cells. If the injection is begun again, the staining process will be repeated, and so on, the tissues alternately flushing and paling. But if the injection rate is just equal to the rate of utilization, a uniform tint will be maintained indefinitely. If the injection rate is faster than the rate of utilization, the color of the tissues will continue to deepen until they can stain no more, and finally the kidney, sharing in the general picture, drips the excessive stain, and, continuing to do so, the combined rates of excretion and utilization again just equal the rate of injection and the body again maintains steadily a certain depth of color, now of course deeper than before.

It becomes apparent that to determine the utilization rate of glucose in the body, the problem is to find the greatest rate at which glucose can be injected into a vein steadily without causing any glucosuria; and following the foregoing analogy it is clear that the injection must be continued long enough to permit the sugar to diffuse uniformly into the tissues and bring each to its corresponding state of saturation before any conclusion is drawn as to what the final and permanent effects of a certain rate of injection really are. It must also be apparent that a single syringeful of sugar solution injected all at once into a vein represents simply a very high rate of injection for a very brief period of time, and that such a method is the least capable of giving accurate information concerning utilization rates and the general behavior of intravenously administered sugar of any which could be devised. Yet the literature is confused by many fallacious ideas which have been developed out of such methods.



Apparatus for intravascular administrations. On the right is the quantitative intravenous pump with rheostat for motor speed control; the solution is drawn from a buret which may be more slender than that shown, and fitted with a side neck leading to a second buret of large capacity to facilitate refilling. The rate of injection is checked at intervals by readings on the buret, and corrected if necessary by touching the rheostat. The flame and bath on the left warm the solution. The delivery tube lies in front.

With these principles in mind, we have devised machines for the purpose of giving uniform intravascular administrations at precisely controlled and predetermined rates and for long periods of time.

DESCRIPTION OF APPARATUS

The machine consists of a glass syringe barrel with a metal piston provided with a piston ring (record syringe), the barrel being fixed while the piston is actuated by a piston rod from an eccentric on a power shaft. The latter is driven by an electric motor through a worm and gear which reduces the speed of the motor and increases the power correspondingly. On the nozzle of the syringe there is a two way all metal valve of special design which is turned automatically by a cam shaft and alternately permits an influx and outflow of fluid to or from the pump barrel. The rate at which the machine delivers fluid is controlled in three ways: first by the size of the barrel, which is interchangeable so that any capacity can be used from 0.5 to 10 c.c.; second, by a device which regulates the stroke of the piston to any desired length from a millimeter up, and, third, by a rheostat with which the motor speed can be controlled delicately while running so that the pump makes any desired number of strokes per minute between 15 and 60.

The machine is intentionally provided with a surplus of power. It is heavily built and of a high grade of workmanship. It pumps precisely and relentlessly anything from water to an 80 per cent. glucose syrup, at any rate from 10 c.c. to 5 liters hourly, overcoming with negligible variations in speed any minor obstructions which may occur in the tubing or the intravenous cannula or needle. All parts which come in contact with the fluid to be injected are detachable and sterilizable. A photograph of the machine is here reproduced.

Experiments with machines of this type and an experimental predecessor have been conducted during the last fourteen months, and some of the results were reported last winter before the Academy of Medicine in Cleveland, and the Society of Internal Medicine in Chicago, at which times an earlier model of the machine was demonstrated. Solutions of glucose, galactose, levulose, lactose, salts of various kinds and some other substances have been given in concentrations ranging from 0.1 to 72 per cent. to men for periods as long as two and one half hours, and to animals for as long as twelve hours, at precisely predetermined rates. Furthermore, the experiments in men and rabbits have been accomplished by the simple introduction of a small metal needle into the vein without anesthetic, shock or other nonphysiologic factor. For dogs we have employed a small blunt needle provided with a flange, or a very small cannula which was introduced into the saphenous vein under novocain.

The results so far obtained have led us to believe that timed intravenous injections of solutions of known concentration over long periods of time offer a most valuable method of studying a wide range of problems of absorption, kidney function and intermediate metabolism. They also promise to extend the possibilities of intravenous injections for diagnostic and therapeutic purposes beyond anything which has been accomplished heretofore. Some of the principal results may be mentioned briefly in this place.

EXPERIMENTAL RESULTS

1. A normal rabbit, dog or man can utilize between 0.8 and 0.9 gram of d-glucose per kilogram of body weight and hour of time without glucosuria for an indefinite time; that is, d-glucose in 10 to 50 per cent. solution can be introduced directly into the veins at rates corresponding closely to 0.85 gram of glucose per kilogram of body weight and hour of time for from six to twelve hours and not produce any glucosuria. Such rates of glucose administration do not cause any effect which can be interpreted as diuresis.

These facts force certain conclusions, some of which may be mentioned.

(*a*) A man weighing 70 kg., when resting quietly in bed, may receive and utilize 63 gm. of glucose by vein per hour without glucosuria. (This is an accomplished fact). He then receives 4 times 63, or 252 calories per hour, a rate corresponding to 6,048 calories per day. If his resting requirement were 3,000 calories per day, he could thus receive double what he needed, or enough to cover the caloric expenditure of the same man during heavy physical exertion. *Intravenous nutrition with glucose is thus proved to be a feasible clinical proposition,* and the way is opened for experiments with amino-acids, polypeptids, etc.

(*b*) The normal tolerance limit for glucose, expressed as a velocity, is established at close to 0.85 gm. glucose per kilogram of body weight hourly, which agrees approximately with what Blumenthal has established by repeated small intravenous injections in animals.

(*c*) The idea, already in part discredited by the work of Pavey and Godden and others, that the "glycogenic function of the liver" is indispensable for the utilization of glucose, or that it is in any sense necessary as a *barrier* to prevent sugar absorbed from the bowel from being lost in the urine, is definitely laid at rest.

(*d*) The idea that any large quantity of glucose given by vein always causes glucosuria and diuresis is an error based on clumsy methods of study.

2. The intravenous tolerance limit in cases of exophthalmic goiter has been found as low as 0.65 gm. per kilogram and hour, but two cases of acromegaly had a tolerance of 0.85 gm. per kilogram and hour, which is not above the normal, although by the oral method it had not been possible to cause glucosuria with glucose.

3. The tolerance limit for levulose when given by peripheral vein has been found close to 0.15 gm. per kilogram and hour, or only one-sixth that of glucose. For galactose it is even less or about 0.1 gm. per kilogram and hour. For lactose it approaches 0, as known before.

4. When glucose is given by vein faster than at the rate of 0.9 gm. per kilogram and hour, glucosuria appears; then usually a little later, diuresis. When the rate of injection exceeds the normal utilization rate, the time which elapses before glucosuria appears varies. If the injection rate is much too fast, the elapsed time is correspondingly short, or if the tissues have previously been partly saturated with sugar, the same applies. If the injection rate exceeds the utilization rate by about 0.1 gm. per kilogram and hour and the tissues happen to have been low in sugar, it may require several minutes of injection before glucosuria begins. But if a given rate of glucose injection causes glucosuria at all, it always begins to do so within the first half hour. The same general principles apply to other sugars with lower rates of injection.

5. As the rates of glucose injection are increased above 0.85 gm. per kilogram and hour, the rates of overflow in the urine increase also according to definite mathematical laws. At any given rate, say for example 1.8 gm. per kilogram and hour, the glucosuria begins slowly, increases in a steep curve, and finally becomes constant at some level characteristic for this rate of injection. The height of this level, of course, is higher in the case of the more rapid injections and lower for the slower ones. Also the time which elapses before the level is established is the greater the higher the level to be attained. It frequently takes from three to four hours for a glucosuria due to a uniform glucose injection by vein to reach its constant level.

As already stated, about 0.85 gm. glucose per kilogram and hour may be given indefinitely without glucosuria. If we give twice this quantity in the same time, that is, 1.7 gm. glucose per kilogram and hour, there is glucosuria which, when constancy is attained, averages about 0.17 gm. per kilogram and hour. This confirms the older view of Carl von Voit, proved to hold for sugar by Lusk, and Fisher and Wishart, that increasing the concentration of the food in the tissues increases the rate of utilization. But if glucose is given at a rate faster than 2 gm. per kilogram and hour, a large percentage of all glucose in excess of the 2 gm. per kilogram and hour appears in the urine, once constant conditions have been secured.

In a normal individual, the greatest rate of glucosuria which can be produced by feeding any quantity of glucose by mouth is limited, and at most approximates that which is produced by an intravenous injection at the rate of 1.8 gm. per kilogram per hour. Hence it would be reasonable to believe that when sugar is given by mouth in health, it is never absorbed faster than at this rate. This method of estimating an absorption rate by finding a rate of direct intravenous injection which just produces the same effect is, so far as we know, new, and it should be applicable to other problems.

6. As glucose is given at rates exceeding 0.85 gm. per kilogram and hour, and unburned glucose begins to accumulate in the tissues and pass out chiefly in the urine, it carries with it water. With rates of injection only slightly exceeding 0.9 gm. per kilogram and hour, the amount of sugar which escapes burning is moderate, and so the rate of glucosuria and the rate of diuresis are correspondingly moderate. But when sugar is given at the rate of 5.4 gm. per kilogram and hour (that is, 54 gm. hourly for a 10-kg. dog), this is equivalent to giving about 3.6 gm. per kilogram and hour over and above what can be burned. It is like giving 3.6 gm. per kilogram and hour to a total diabetic.

The effect is an incredibly great diuresis. When glucose is given at this rate to a 10-kg. dog, the urinary output rises rapidly to the vicinity of 350 c.c. per hour. If each hour the dog receives enough water to make good the losses, the rate of diuresis or a higher one can be maintained for long periods of time. A 10-kg. dog actually passed in eight hours 2,800 c.c. of urine. This would correspond to 19,600 c.c. for a man weighing 70 kg. in the same time, or an hourly rate of 2,450 c.c. If enough water is not given to counterbalance the urinary water losses, the volume of urine falls and the dog suffers from thirst. Death may be caused in this way. Unless plenty of water is given, not all of the unused sugar can leave the body, since it appears that the concentration of glucose in the urine will not rise above 12.5 per cent. To make 12.5 gm. of glucose pass out of the body through the kidneys, at least 100 c.c. of water are necessary. On the other hand, if one gives too much water with the hourly glucose injection rate of 5.4 gm. per kilogram and hour, there is danger of stopping the heart mechanically. We have produced a diuresis as high as 600 c.c. per 10 kg. of body weight for one hour, and still greater rates

are possible; but attempts to continue such enormous water traffics lead to heart failure. This rate would correspond to an output of 4,200 c.c. of urine hourly from a man weighing 70 kg., or 100 liters in twenty-four hours. *In giving intravenous injections of glucose there are then two things to avoid: too great dehydration on the one hand, and heart failure from imposing too much mechanical work on the other. These can both be avoided by knowing the number of grams of glucose which enter the body hourly, and what volume of water is moved by such a rate of sugar injection.*

CLINICAL APPLICATION

It is hardly necessary to emphasize the therapeutic possibilities which these experiments suggest. With a knowledge of the proper concentration of the solution to be used, and the rate appropriate for this particular solution, we may (1) abstract any quantity of water from the body which we deem safe or desirable, or we may (2) pass through the body a great flushing stream to wash out poisons. How far the principles worked out for normal individuals will apply in disease we have only begun to learn. In this connection it may be well to recall that the literature already contains observations on the use of sugars in therapeutics.

Sugars have been given by mouth or bowel for purposes of nutrition or to obtain other desired metabolic or chemical effects in a wide range of clinical conditions. But as pointed out, such methods of administration do not introduce sugar into the blood faster than an approximate rate of 1.8 gm. per kilogram and hour at most, which is not sufficient to permit much glucose to escape utilization. Hence, after such administrations, unburned sugar does not accumulate in the tissues except to a limited extent, and they are not diuretic except in cases with decreased rates of sugar utilization (diabetes). Intravenous injections may exceed this rate, and so cause, in addition to the ordinary chemical effects of glucose, new physicochemical effects due to the presence of unburned sugar molecules in the tissues, and expressed outwardly as diuresis. Now glucose and levulose have long been found useful when given in cases of diabetic coma, especially when given intravenously. In such cases either mode of administration produces great diuresis, but especially levulous by vein (for levulose the *normal* intravenous tolerance limit being only 0.15 gm. per kilogram and hour). It has not yet been recognized that the value of this treatment is due to the diuresis, but we have on other occasions given the reasons which make us believe that this is the case. In 1907, Fleig[1] made roughly timed intravenous sugar injections, was struck by the remarkable diuresis, and realized possible clinical applications, without making any, however. Kausch,[2] in 1911, recommended and attempted intravenous nutrition with glucose in hysterical vomiting hyperemesis gravidarum, surgical conditions and acute gastro-intestinal disease, but laid no emphasis on the diuretic action. Fischer[3] recommended intravenous glucose injections in conditions of edema, nephritis and intoxication, but especially oligurias and anurias of various sorts on the basis of his observations concerning the power of sugars to dehydrate colloid gels and on their parallel diuretic effects in rabbits and men, thus bringing the behavior of sugars in these respects into relationship with that of diuretic salt solutions and recognizing the physicochemical principles which underlie the beneficial effects of intravenous injections of sugar. In 1914, Henriques[4] reported the use of from 250 to 300 c.c. of 30 per cent. glucose solution in the hour to about fifty clinical cases of heart disease, intoxication, and severe infections, finding special indications in oligurias of nephritis and heart disease. He did not discuss the principles involved. This year Turrettini[5] has given details of three cases of acute nephritis and three of mercuric chlorid poisoning, in all of which the urinary output was favorably affected. Experiments have been in progress in this laboratory for some time to determine the limits of application of these principles and the present technic of administration to different grades of experimental poisoning with mercuric chlorid, arsenic and diphtheria toxin. The system is being tested in the clinic as opportunities offer. Its chief application would appear to be in acute intoxications of various sorts, acute oligurias and anurias, intoxication of pregnancy, and in cardiac and other edemas. Further work is in progress on other diuretics besides sugars and on other sugars besides glucose, and also with simultaneous injections of sugars and salts, such as acetates and bicarbonates.

1. Fleig: Compt. rend. Soc. de biol., 1907, lxiii, 190.
2. Kausch: Deutsch. med. Wchnschr., 1911, xxxvii, 8.
3. Fischer, M. H.: Edema and Nephritis, New York, John Wiley & Sons, 1915.
4. Henriques, E.: Presse méd., 1914, xxii, 121.
5. Turrettini: Rev. méd. de la Suisse romande, 1915, xxxv, 204.

SIGNIFICANCE AND PREVENTION OF AMEBIC INFECTIONS IN THE MOUTHS OF CHILDREN *

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ALICE G. MANN
NEW YORK

From time to time during more than half a century, a protozoan genus called *Ameba* by some, and *Endameba* or *Entameba* by others, has been reported as occurring chiefly about the gum margins in the oral cavity of human beings.

Few details of the morphology, comparative incidence and pathogenicity of the members of this genus have been given. Until last year, most, if not all of the species, were thought to be nonpathogenic. Indeed, of so little worth were they considered that no mention of their presence is made in the general histologic review of parasitic amebas of man by several authors, who used the term "parasitic amebas" as synonymous with "intestinal amebas."

Thus Craig says:

> There is no experimental evidence connecting *Ent. buccalis* (or the mouth ameba) with disease. It is very doubtful if it has anything to do with caries of the teeth, although it is most frequently encountered in the cavities of carious teeth. However, it may be frequently demonstrated in material scraped from the roots of perfectly normal teeth, so that, as far as the evidence goes, we must regard *Ent. buccalis* as only a secondary invader. The amebae known as *Ent. gingivalis*, Gross, 1849, and *Ent. dentalis*, Grassi, 1879, are probably identical with *Ent. buccalis* and do not merit separate description.

* From the Bureau of Laboratories, Department of Health, New York City.
* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

In 1914, Smith and Barrett, followed by Bass and Johns and several other investigators, asserted that mouth amebas occurred chiefly in cases of pyorrhea alveolaris or Riggs' disease, and that they were the probable cause of this common septic infection of the jaws. Other observers have not agreed with this assertion because sufficient evidence has not been given by its authors to make us sure of the types of amebas found and of the extent, if any, of their pathogenic action. So several hypotheses may be formulated as to the part thought to be played by amebas in mouth infections.

HYPOTHESES IN REGARD TO ACTION OF AMEBAS IN HUMAN MOUTHS

1. Amebas are accidental invaders; they produce no pathogenic or other reaction in the mouth (Provazek Hartman and others).
2. Amebas in the mouth have a beneficent action as scavengers (Chiavaro and others).
3. Amebas may be sometimes pathogenic, producing or helping to produce certain cases of pyorrhea alveolaris, certain abscesses and certain other mouth infections (Leidy, Gross, Flexner, Smith and Barrett and others).
4. Amebas are the specific cause of pyorrhea alveolaris (Bass and Johns and others).
5. Amebas may be pathogenic only in connection with certain other micro-organisms.

The comparative worth of these hypotheses may be discussed as follows:

In favor of the first hypothesis, that is, that amebas are accidental, nonpathogenic invaders, are the facts that amebas have been reported so frequently in apparently normal mouths and that when found in diseased conditions, they are always accompanied by other micro-organisms of pathogenic types, which might be sufficient to produce the disease. Against it is the fact that they are found so much more frequently and in so much larger numbers in the lesions.

As for the second hypothesis, that amebas are beneficent scavengers, there is no question but that amebas are scavengers both of other micro-organisms and of tissue host cells — at least, of leukocytes, red blood cells and broken down epithelial cells. But they probably take up as many harmless as well as harmful germs and leave enough of the latter to exert their full power in harming the tissues of the host. Then, too, since we know that certain amebas will live on brain, liver and kidney cells of human beings, there is no *a priori* reason to suppose that the mouth amebas will not help in destroying the fixed tissue cells in the mouth, especially after a certain amount of injury has been done them by other micro-organisms. The evidence, then, is against this second hypothesis as it stands.

As regards the third hypothesis, that amebas are sometimes pathogenic, we can only say that the large number of amebas in most cases of pyorrhea and in some abscesses of the jaw, and their infrequent presence in absolutely healthy mouths make this a tenable hypothesis.

We may state, concerning the fourth hypothesis, that is, that amebas are the specific cause of pyorrhea alveolaris, that whether or not they are the specific cause of this condition can only be determined after further study. Some facts brought forward in this paper bring new evidence on this point.

In regard to the last hypothesis, that is, that amebas may be pathogenic only in connection with certain other micro-organisms, we must remember that if amebas absorb and digest fixed tissues as well as leukocytes, blood cells and other wandering cells, they may help decidedly in keeping up a lesion bacteria have started. This fifth hypothesis is also tenable.

ORIGINAL WORK

In order to help determine which, if any, of these hypotheses is correct, we have been trying to find out, first, how many children are infected and at what age the amebas begin to appear in their mouths, as well as to study the condition of the mouths showing the amebas. Second, what types of amebas, if more than one, are present. Third, the relation, if any, of these amebas to the diseased condition of the childrens' mouths, and fourth, the necessity and worth of preventive measures.

We have begun our study by examining the mouths of the schoolchildren in one of the poorer districts of New York City. We have already started the examination of a similar group in one of the more well-to-do districts. At the same time, the Bureau of Laboratories of the New York City Health Department has begun a more general study of focal mouth infections, particularly of pyorrhea alveolaris.

Soon after our observations on adults were begun, we found that all patients presented to us by the several dentists who are collaborating with us already had pus pockets formed in the jaw alveoli — that is, they were well-established cases — and when we began to inquire for beginning cases, we learned that the diagnosis of pyorrhea alveolaris is made by most dentists only after pus pockets can be demonstrated, so this added interest to our decision to hunt for beginnings in schoolchildren.

So far 1,678 children (those in only one session of the school) between the ages of 5 and 15 years have had a preliminary examination, and from 995 representative ones stained smears have been made and examined for amebas. The 1,678 children have been divided roughly into those having healthy gums and those with receding or spongy and bleeding gums. The healthy looking gums are further divided into those with one or more decayed teeth, and those with apparently sound teeth. Needless to say, we found very few of the latter, that is, of those with apparently healthy gums and sound teeth, and about one half of all showed unhealthy gums.

From many cases, two smears were taken. The smears were made as follows: In the bad cases, the teeth and gums were cleaned with a cotton swab dipped in 50 per cent. alcohol; then with the flat end of a hard wood sterile toothpick, material was scraped from the margin of the gums (there were no pus pockets in these children, so we did not need a scaler) and stroked lightly over a clean glass slide, three or four streaks being made. The smear was then fixed while still moist by dropping methyl alcohol on it, and it was ready to send to the laboratory. This was called the superficial smear. A second toothpick was used to get material from beneath the margin of the gums, from which another smear was made and fixed. This was called the deep smear. In the cases with clean teeth and tight healthy looking gums, the first smear was made before the cleaning with alcohol. All of these smears were stained with Giemsa's stain and

examined for amebas. Other stains have also been used in the more minute study of types of amebas. In regard to the identification of amebas by stained films, we would say that they are more certainly and easily identified by this method than by warm living preparations, though, of course, both methods should be used in studying all of the characteristics of these micro-organisms. In hunting for amebas in these smears, we have found that most of them seem to be between the superficial bacterial layer and the deep leukocytic layer, so one may find them only in large numbers in one small part of a smear, especially in a smear taken in a routine way.

Stained by Giemsa, the delicately but definitely reticulated cytoplasm of the ameba stains a clear blue, while the small nucleus shows as a delicate rounded or irregular mass of red granules and threads, with often a central light blue staining karysome which sometimes contains a vacuole-like body. This nucleus no doubt corresponds to that most frequently described for *Endameba histolytica-tetragena*. There has been found no marked variation from this type of nucleus.

Amebas are so notoriously variable in their entire morphology, according to their stage of development, and to the conditions of growth, that no definite opinion should be expressed as to the species of the forms found in these mouths until much further study has been made. We may say, however, that there seem to be at least two morphologic types of amebas present: one small, with more or less rounded, dense nucleus, with a few or no inclusions or vacuoles, found in the majority of healthy mouths, and the other large, with more irregular nucleus with many large vacuoles and containing many red blood cells, leukocytes and other dense masses formed by undigested material. The latter type is found in the majority of unhealthy mouths. Its appearance agrees with that of the type most frequently seen in the well-developed cases of pyorrhea alveolaris. We have seen no cysts. We have seen evidence of budding and of more equal division.

NUMBER AND PERCENTAGE OF AMEBAS FOUND IN EACH GROUP OF CHILDREN

Condition of Mouth	Between 5 and 16 Years		Between 5 and 7 Years	
	Total	Amebas Present	Total	Amebas Present
1. Healthy gums	(+ 38) (— 92)	= 29 per cent.	(+ 3) (— 31)	= 9 per cent.
2. Healthy gums, decayed teeth	(+109) (—183)	= 37 per cent.	(+ 32) (—105)	= 23 per cent.
3. Tartar and receding gums	(+182) (— 96)	= 65 per cent.	(+ 19) (— 17)	= 53 per cent.
4. Spongy, bleeding gums	(+268) (— 28)	= 91 per cent.	(+ 34) (— 5)	= 70 per cent.

We have found that amebas begin to appear at a very early age, 35 per cent. of children between 5 and 7 years of age being infected. The numbers of those infected with amebas increase in frequency with age. Between 5 and 15 years, 60 per cent. show these protozoa on their gum margins. In apparently normal mouths, only 29 per cent. show amebas. Taking the percentages by groups as in the accompanying table, the results are more significant.

Finding the amebas so often in apparently healthy mouths and in such young children does not agree with the statement of Bass and Barrett that they are not found in healthy mouths. Whether or not one or more varieties are taken from adult pyorrhea patients and are simply waiting their opportunity to exert a pathogenic action, we cannot yet say. But the evidence seems to point toward the establishment of either the first or the fifth hypothesis already given.

These results, however, as they stand, are very striking, especially when we must add that most of the cases of spongy and bleeding gums show more amebas in the films than the other cases. If we could only rule out other micro-organisms, the evidence for the pathogenic action of the amebas would be stronger.

We have, in these schoolchildren carriers of amebas, a marked opportunity to test the prophylactic effect of ipecac or its emetin alkaloid on mouth amebas.

We have divided the cases showing amebas into three groups, one to be watched without treatment, and others to be treated in different ways, one with emetin and the other by ordinary cleanliness. We have a tooth wash made up containing a dilution of emetin, and have the washing of the teeth done morning and afternoon in the school clinic under the supervision of the school nurse.

The first examinations, one week after the beginning of this treatment, gave marked results, in that every child but one, receiving emetin, showed no amebas, while many of the others showed them. In the later examinations, however, amebas were found in a few of the emetin-treated which were negative before, while a few more of the controls showed none.

The following points have been brought out so far by these examinations:

Amebas are demonstrated irregularly in all mouths once showing them, most constantly and in largest numbers in mouths showing gingivitis, least so in healthy mouths.

With ordinary teeth cleansing methods, the number of mouths showing amebas is reduced one half. With emetin in the tooth wash, the number showing amebas is greatly reduced, only about 10 per cent. showing them. The second set of controls — those doing their cleaning *at home* by ordinary methods — continue to show amebas in about 75 per cent. of the cases.

The question as to the amount of emetin to be used has not yet been settled. We began with a 1:200 solution, then reduced it to a 1:400 strength. Probably a much smaller amount would be sufficient to keep down the development of the amebas.

We hope to carry on these investigations for several years and, if necessary, to extend the number of children included in the groups. Whether or not we can demonstrate fully the efficiency of the use of an amebacide in preventing many cases of pyorrhea alveolaris remains to be seen. We hope by combining these practical investigations with the laboratory studies that we may be able to help demonstrate the relationship of these amebas in septic mouth infections.

ABSTRACT OF DISCUSSION

DR. WOODS HUTCHINSON, New York: It is an interesting and important subject, especially in view of the effect of the organisms involved in later life. My impression is that we shall find that the diseases of the gums in later life bear the same relation to the infections of childhood that the diseases of so-called middle age do to the infectious diseases of younger life. We elderly individuals, who ought to be Oslerized probably, are beginning to be terribly worried about diseases that attack us over 50. By taking proper steps we may very early remove the cause of our worries.

The ameba in its relations with the pathogenic organisms may prove to be the keynote of the diseases and loss of teeth at an immature and undesirable time.

DR. C. C. BASS, New Orleans: I do not know of any other series of cases as large as that reported by Dr. Williams. Most examinations that have been reported and come to my attention have been in older people, practically all of whom were infected. The study, then, of Dr. Williams and her associates is especially valuable because it takes up the subject of the disease at a stage at which it could be prevented, perhaps, whenever we know enough about it, or cured before too great damage is done. As to the pathogenicity of the amebas that we find in the mouth and in pyorrhea lesions, the evidence at hand leaves the question somewhat open. Many good authorities are confident that this ameba is not the cause of pyorrhea and does not play a part at all. Others are willing to grant that it may play a part. Still others, including ourselves, feel certain that the chief specific cause of alveolodental pyorrhea is *Endamœba buccalis*. One of the things that we have observed we believe as certainly as any other thing is that these endamebas feed on certain nucleated cells that are to be found only in inflamed tissue. If we make sections of the diseased tissue we find these same cells distributed not only on the surface, but actually in the inflamed tissue. Now for endamebas to get these cells, they must crawl about or burrow about in the inflamed tissue searching for them. We have been able to demonstrate and find the endamebas in the tissue and determine to what extent they burrow. We find that they burrow for a distance many times their diameter, but possibly they do not burrow as deeply as the endamebas in amebic ulcers of the intestine do. Not only do we find them in the tissue, but we find them also on the surface of the closed ulcerated tissue in the bottom of the pyorrhea pocket. In burrowing back and forth from the pyorrhea pocket and then into the tissue, many different species of bacteria are transported or transplanted and retransplanted by the amebas. Whether endamebas are present in all cases of pyorrhea we will be obliged to wait for further studies to determine until those working on the subject have acquired such technic as will permit them to make accurate negative diagnoses. It is quite difficult to make an examination which justifies one in saying positively that the individual has not some endamebas present. We may say he has no endamebas demonstrable by our technic but a microscopic lesion may be large enough to hold many endamebas. We cannot give a mouth a casual macroscopic observation, and determine that there is no inflammation of peridental membrane around or between any of the teeth. The disease begins between the teeth, where it cannot be seen. After it is advanced, then we may see evidence of the disease labially or lingually. It is difficult if not impossible to determine that an individual has a normal mouth. The fact that some endamebas have been found and are found in what are called apparently normal mouths cannot be taken too seriously on this account. Our experience has been that in the examination of probably 500 individuals having pyorrhea, we found endemebas in all of the patients after we had acquired the technic which seems to us quite necessary.

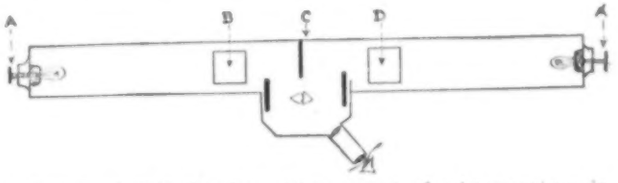

Diagram of light for determining amount of micro-organisms in suspensions. See full description in text. *A*, *A'*, screw adjustment for lamp; *B*, standard bottle; *C*, Lummer-Brodhun photometer; *D*, test bottle.

DR. ANNA W. WILLIAMS, New York: Just such work as Drs. Bass and Johns are doing in histologic biology will no doubt be of much aid in helping us to get more evidence in regard to the relationship of this organism to disease. In regard to the use of the toothpick, I would say that we simply use a toothpick in our routine examinations of the schoolchildren. These children do not need a scaler since they do not have pus pockets. We have only found one of the older boys having small pus pockets. We use Young's dental scaler No. 22 for obtaining material from the adult pyorrhea cases that we have studied.

COMPLEMENT FIXATION IN DIAGNOSIS WITH BACTERIAL EXTRACTS PREPARED WITH DIGESTIVE FERMENTS

J. O. HIRSCHFELDER, M.D.
SAN FRANCISCO

In a preliminary report[1] in THE JOURNAL a method was described by me for the preparation of a soluble vaccine against the pneumococcus, and the evidence presented of its efficacy in producing active and passive immunity. Ten cases of pneumonia treated with the extract were tabulated and reference was made to experiments with other micro-organisms. Since then, extracts have been prepared with greater accuracy by improved methods and the immunizing effects have been made more constant. At the same time, it has been found that these extracts are valuable as antigens in complement fixation for diagnostic purposes.

PREPARATION OF EXTRACTS

As the standardization of bacterial suspensions by the known methods of counting is notably uncertain, a gravimetric method was devised based on their opacity as compared by means of a delicate photometer with that of a suspension containing a known quantity of the micro-organism as determined by its weight when dried at 110 C. The germs were grown in bouillon that had been passed through a Berkefeld filter and then autoclaved. After growth, the culture was filtered through a Berkefeld and the germs washed several times with distilled water. The bacteria were then gently rubbed off under a fine stream of distilled water with absorbent cotton on the end of a wire and the suspension well shaken.

A portion was weighed and dried at 110 C. and the dry weight determined. Weighed portions of the suspension were diluted with measured quantities of distilled water until the opacity corresponded to that of the standard. The amount of the dried bacteria in the standard could thus be readily calculated. Conversely, it became easy to calculate the amount of the dry micro-organism in an unknown suspension by diluting to the opacity of the standard.

The apparatus used consists of a Lummer-Brodhun photometer head to which two light-proof arms are attached, in each of which a small electric lamp can be moved back and forth by means of a screw. After the light on the two sides has been equalized, the standard test bottle is placed between the photometer and the lamp on one side, and on the other side a measured quantity of the bacterial suspension to be determined in a tested bottle. This is then diluted with distilled water until the light which passes through both sides is the same. When this is the case, the suspension contains the amount of dry micro-organism represented by the standard. All of the bottles used must be first tested optically when filled with distilled water. The standard is made by using a suspension of electrosilicon in distilled water, which is allowed to stand a few hours to permit the heavier particles to sink. The fine suspension is then standardized optically with a suspension of the micro-organism equivalent to the desired amount of dried bacteria.

In standardizing the pneumococcus, suspensions were used of washed living pneumococci of the types Rockefeller I, 2 and 3, cultures of which had been kindly sent by the Rocke-

1. Hirschfelder, J. O.: The Production of Active and Passive Immunity to the Pneumococcus with a Soluble Vaccine, THE JOURNAL A. M. A., Oct. 12, 1912, p. 1373.

TABLE 1.—RESULTS OF COMPLEMENT FIXATION BY McNEAL'S AND BY AUTHOR'S ANTIGEN FROM GONOCOCCI

Patient	McNeal Antigen	Hirschfelder Antigen	Remarks
Qi.	— — —	— — —	Acute gonorrhea.
Ag.	— — —	— — —	Sexual neurasthenia. No gonorrhea.
Rip.	— — —	— — —	Syphilis. No history of gonorrhea.
Hut.	— — —	— — —	Chronic prostatitis. *Micrococcus catarrhalis.* No history of gonorrhea.
Gr.	— — —	— — —	Syphilis. No gonorrhea.
Hof.	— — —	— — —	Chronic prostatitis. Previous gonorrhea, Wassermann positive.
Go.	— — —	— — —	Tabes. No history of gonorrhea.
Ha.	— — —	— — —	Prostatic hypertrophy. No history of gonorrhea.
Fa.	— — —	— — —	Hydrocele. No history of gonorrhea.
Jor.	— — —	— — —	Sexual neurasthenia. No history of gonorrhea.
Mrs. S.	— — —	— — —	No history of gonorrhea.
Hag.	— — —	— — —	Stricture of urethra. No history of gonorrhea.
Ric.	— — —	— — —	No history of gonorrhea.
Mrs. R.	— — —	— — —	Severe vaginal discharge. No gonorrhea.
Bonv.	— — —	— — —	Sexual neurasthenia. No gonorrhea.
Br.	— — —	— — —	Sexual neurasthenia. No gonorrhea.
Mrs. L.	— — —	— — —	No history of gonorrhea.
Reg.	— — —	— — —	Acute gonorrhea, five weeks.
Ab.	— — —	— — —	Sexual neurasthenia. No gonorrhea.
Haf.	— — —	— — —	Acute urethritis without gonococci.
Lar.	— — —	— — —	Acute gonorrhea. Epididymitis one year ago.
Col.	— — —	— — —	Sexual neurasthenia. No gonorrhea.
McM.	— — —	— — —	Sexual neurasthenia. No gonorrhea.
Chr.	— — —	— — —	Had gonorrhea two years ago. None now.
Lu.	— — —	— — —	Sexual neurasthenia.
Br.	— — —	— — —	Had gonorrhea and used vaccine.
Lev.	— — —	— — —	Hydrocele. No gonorrhea.
Hor.	— — —	— — —	Had gonorrhea three weeks.
Ho.	+ — —	+ — —	Chronic prostatitis. No gonococci. Previous gonorrhea.
Hu.	+ — —	+ — —	Had a discharge for two years. No gonococci in smear.
O'B.	+ — —	+ — —	Chronic prostatitis. No gonococci. Previous gonorrhea.
Pol.	+ — —	+ — —	Acute gonorrhea. Previous gonorrhea.
Ge.	+ — —	+ — —	Previous chronic gonorrhea. Doubtful joint affection.
Mur.	+ + —	+ + —	Chronic prostatitis. No gonococci in fluid.
Mo.	+ + —	+ + —	Acute gonorrhea. May have had chronic.
Ber.	+ + —	+ + —	Had testicle removed. Had several attacks of gonorrhea. Prostatitis without gonococci.
Nom.	+ + —	+ + —	Chronic gonococcic prostatitis.
Be.	+ + —	+ + —	Chronic gonococcic prostatitis.
Rip.	+ + +	+ + +	Chronic prostatitis. Epididymitis. Gonococci present.
Lon.	+ + +	+ + +	Has been taking gonococcic vaccine twice a week.
Dil.	+ + +	+ + +	Gonorrhea for six months.
Ha.	+ + +	+ + +	Gonorrhea for eight months.
Ha.	+ + +	+ + +	Gonorrhea five years ago for seven months.
Lin.	+ + +	+ + +	Chronic prostatitis. Gonococci.
Sil.	+ + +	+ + +	Subacute prostatitis and epididymitis. Gonococci present.
Mon.	+ + +	+ + +	Subacute gonorrhea with gonococci.
Bal.	+ + +	+ + +	Chronic prostatitis. No gonococci in fluid.
An.	— — —	+ — —	Gonorrhea nine years ago.
Bas.	— — —	+ — —	Chronic prostatitis. No gonococci in fluid.
And.	— — —	+ — —	Sexual neurasthenia. Had gonorrhea, but not at present.
Gr.	— — —	+ — —	Had gonorrhea five years ago. None for three years.
Far.	+ — —	+ + —	Syphilis. Had several attacks of gonorrhea.
Man.	+ — —	+ + —	Subacute gonorrhea with gonococci.
Sed.	+ + —	+ + +	Chronic gonococcic prostatitis. No gonococci in fluid.
Ces.	+ + —	+ + +	Chronic gonococcic prostatitis. Reinfection.
Jen.	+ + —	+ + +	Chronic gonococcic prostatitis.

feller Institute. The tests made with the three different pneumococci show how accurately the observations could be made.

PNEUMOCOCCUS ROCKEFELLER 1

18.6071 dried at 110 C. gave 0.0579.
17.7126 dried at 110 C. gave 0.0552.
1.0 contains 0.00332 dry.
1.1223 suspension diluted to 80 c.c. corresponds optically to standard.
0.8844 suspension diluted to 64 c.c. corresponds optically to standard.
Hence, 1,000 c.c. standard corresponds to 46 mg. dry.

PNEUMOCOCCUS ROCKEFELLER 2

19.3252 dried at 110 C. gave 0.0512 dry.
18.8286 dried at 110 C. gave 0.0490 dry.
1.0 contains 0.0026 dry.
1.0427 suspension diluted to 60 c.c. corresponds optically to standard.
0.9498 suspension diluted to 58 c.c. corresponds optically to standard.
Hence 1,000 c.c. standard corresponds to 45 mg. dry.

PNEUMOCOCCUS ROCKEFELLER 3

18.2440 dried at 110 C. gave 0.0488 dry.
18.3318 dried at 110 C. gave 0.0491 dry.
1.0 contains 0.0027 dry.
0.9460 suspension diluted to 60 c.c. corresponds optically to standard.
1.1075 suspension diluted to 70 c.c. corresponds optically to standard.
Hence 1,000 c.c. standard corresponds to 45 mg. dry.

In the preparation of the pneumococcic extract a suspension of living washed pneumococci was taken such that it corresponded optically to 1.8 gm. dry to 1,000 c.c. This was heated to 38 C. and an equal quantity of a solution of 0.2 per cent. Cudahy Pancreatin and 2 per cent. sodium bicarbonate also heated to 38 C. was added. The mixture was allowed to stand at 38 C. for fifteen minutes and then barely acidulated with pure hydrochloric acid until the development of gas on the addition of acid ceased. It was then filtered through a Pasteur filter which made it germ free and sterile. When it was to be employed as an antigen it was simply put into small sterile bottles and kept in an ice chest. For experimental and therapeutic purposes 0.1 per cent. tricresol was added in order that it might be handled without fear of infection. The tricresol was used only after it had been determined by experiments on rabbits that absolutely no interference with the immunizing properties of the extract was thereby produced.

The effect of the action of the alkaline pancreatin on the pneumococci was absolutely inappreciable, for although immunizing substance was extracted, as will be shown in a later communication, the staining properties, the viability in culture and the virulence of the pneumococci were unchanged. It was repeatedly proved that pneumococci so treated killed rabbits injected with them just as the untreated pneumococci did. They could be grown from the heart's blood of the animals that died in exactly the same manner.

Extracts of the gonococcus, streptococci, staphylococci, *Streptodiplococci rheumaticus* (Poynton-Payne), streptodiplococci of endocarditis and similar cocci were made in the same manner.

With the members of the typhoid group like typhoid, colon, hog cholera, it was found that although some results were obtained by extracts that had been subjected to the digestive process for fifteen minutes, better were given by such as had been acted on for thirty minutes, whereas longer periods gave less potent extracts. Hence for this type of micro-organism thirty minutes was the period used as a routine.

With tubercle extract the method employed was somewhat different, although the principle involved was the same. After the germs had grown they were strained through cheese-cloth and thoroughly washed with distilled water. The mass was partially dried with filter paper. A weighed por-

tion was dried at 110 C. and a portion of the moist living bacilli, corresponding to 2 gm. dry, was mixed with 500 c.c. distilled water heated to 38 C. To this 500 c.c. 0.4 per cent. Cudahy pepsin in 0.6 per cent. HCl heated to 38 C. was added and the mixture allowed to stand at 38 C. for three hours. It was then made faintly alkaline to phenolphthalein with sodium carbonate and filtered through a Pasteur filter. For use as an antigen the germ-free sterile fluid was simply bottled, whereas for experimental and therapeutic use 0.1 per cent. tricresol was added. When correctly prepared, 20 c.c. should kill a highly tuberculous guinea-pig weighing 250 gm. within twenty-four hours, with a reaction consisting of hemorrhages in and about the tuberculous deposits; 15 c.c. should not kill the animal, but should produce the reaction, which can be found by killing the animal and making a postmortem examination.

This tubercle extract is entirely different from tuberculin in its qualities. It is destroyed by heating to 100 C., which is not the case with tuberculin. In making the extract it was found that digesting for three hours gave a more potent extract than when the ferment acted for a shorter or a longer period.

Work is being done with numerous other micro-organisms, including the *Spirochacta pallida*, as there is every reason to believe that the principle of extracting the end-body unchanged applies to all bacteria.

All of the ferments of digestion will act, but for different types some seem better than others, although it is probable that special methods could be worked out with each which would give as good results as any of the others.

In the preparation of the various antigens, accurate standardization of the micro-organisms is not necessary. Any moderately thick suspension may be used and an equal volume of the solution of the digestive ferment added according to the method described above. Of course, it is necessary in each case to determine the antigen value just as is done in making the ordinary Wassermann test.

With the discovery of the principle of complement fixation of the bacterial antibodies by Bordet, the possibilities of diagnosis entered on a new era. The investigations on the subject that have been made since then have fully confirmed the correctness of Bordet's conclusions. Practical results of great value have been achieved with the gonococcus, mainly through the work of McNeal and Strauss. With the other micro-organisms, however, the diagnostic value of the method has not met with general acceptance, as the results have been rather variable. It has seemed probable that this has been due to the difficulty of obtaining a good antigen and not to any incorrectness of the fundamental principle. As investigation with extracts of numerous micro-organisms made with digestive ferments and with the bacteria after extraction indicated that the substance extracted was not an autolyzed product but the real end-body, it was

TABLE 2.—COMPLEMENT FIXATION IN TUBERCULOSIS

The antigenic unit of the bacterial extract of a single strain employed was 0.5 c.c.

Patient	Compliment Fixation	Tubercle Bacilli in Sputum	Remarks
Br.	— — —	—	Mother had tuberculosis.
Miss Ha.	— — —	—	Mother had tuberculosis.
Kel.	— — —	—	Pronounced tuberculous by three doctors.
Mrs. L.	— — —	—	Heart disease. Physical signs and roentgenogram negative.
Dr.	+ — —	+	Advanced tuberculosis. Wassermann + + +.
Mrs. Gr	+ — —	+	Moderate tuberculosis.
Mrs. Led.	+ — —	?	Tuberculosis found two years ago.
Mrs. Gn.	+ — —	+	Tuberculosis.
Ha.	+ + —	—	Spinal tuberculosis.
Miss McD.	+ + —	+	Tuberculosis. Has been taking tubercle extract.
Gs.	+ + —	+	Moderate tuberculosis.
Mil.	+ + —	+	Advanced tuberculosis.
Sim.	+ + +	+	Tuberculosis two years.
Miss Br.	+ + +	+	Advanced tuberculosis.
Mrs. L.	+ + +	+	Advanced tuberculosis.
Mrs. H.	+ + +	..	Has had tuberculosis four years. Is taking tuberculin.
Pal.	+ + +	+	Advanced tuberculosis.
Le.	+ + +	+	Tuberculosis treated with extract.
Mo.	+ + +	+	Moderate tuberculosis.
Mar.	+ + +	+	Tuberculosis.
Lan.	+ + +	+	Tuberculosis four years.
Ur.	+ + +	+	Tuberculosis.
Baby Ta.	+ + +	—	Tubercle bacilli in feces.
Nel.	+ + +	..	Tuberculous glands removed.
Fis.	+ + +	—	Tuberculous glands.
Miss La.	+ + +	—	Tuberculous glands.
Mrs. H.	+ + +	—	Tuberculous glands.
He	+ + +	—	Bone tuberculosis operated.
2 Rabbits	+ + +	..	Experimental eye tuberculosis.
3 Rabbits	+ + +	..	Experimental eye tuberculosis treated with extract.
Normal rabbit	— — —	..	

TABLE 3.—STREPTOCOCCUS

The antigenic unit of an extract of mixed streptococci was 0.5 c.c.

Patient	Complement Fixation	Remarks
Miss L.	+ + +	Has been taking streptococcic extract.
Dr. J.	+ + +	Streptococcic infection of finger. Took streptococcic extract.
Miss L.	+ + +	Abortion terminating fatally. Streptococci isolated from blood.
Ster.	+ — —	Chronic rheumatism.
St.	+ — —	Chronic rheumatism.
McQ.	+ + —	Chronic rheumatism.
Pet.	+ + —	Chronic rheumatism.
Mrs. C.	+ + +	Chronic rheumatism.
Gr.	+ + —	Chronic tonsillitis.
Miss S.	+ + —	Chronic tonsillitis.
Dav.	+ — —	Neuritis.
Noc.	+ + —	Neuritis.
Mrs. W.	+ + +	Retained gauze in abdomen following operation. Removed and pus found. No report of bacteriologic findings.

TABLE 4.—TYPHOID

The antigenic unit of an extract of mixed bacilli was 0.5 c.c.

Patient	Complement Fixation	Remarks
Ar.	— — —	Appendix abscess.
Laz.	+ — —	Appendix abscess not examined to determine whether he was a typhoid carrier; no history of typhoid.
Crow.	+ + —	Infarction of the lung. No history of typhoid. Not examined to determine whether he was a typhoid carrier.
Cr.	+ + +	Temperature for three weeks as high as 104 F. Widal negative. No further observations.
Bel.	+ + —	Child with typhoid.
Byr.	+ — —	Convalescent typhoid.
Sun.	+ + +	Had taken typhoid vaccine four months ago.
Cos.	+ — —	Had taken typhoid vaccine three years ago.
Four.	+ + +	Had typhoid in January, 1914. Took typhoid vaccine in February, 1915.
Car.	— — —	Had irregular fever, ambulatory. Suspected typhoid. Widal negative. No further observations.
Hor.	+ + +	Widal negative. Found three days later.
B.	+ + +	Widal negative. Found two days later.
Fr.	— — —	Suspected typhoid ambulatory. Did not develop.
Cr.	— — —	Suspected typhoid. Meningitis with meningococci.
Ro.	— — —	Suspected typhoid. Proved to be malaria.
Na.	— — —	Suspected typhoid. Had tubercle bacilli in sputum.
St.	— — —	Suspected typhoid. Had temperature for three weeks. Proved to be stone in kidney.
Aik.	— — —	Suspected typhoid. Widal negative. Died of tuberculous meningitis.
Laz.	— — —	Considered typhoid. Widal positive. Proved to be spinal meningitis with tubercle bacilli in spinal fluid.
Mrs. M.	— — —	Considered typhoid. Proved to be tuberculous meningitis. Confirmed by postmortem.
Rob.	— — —	Temperature for some weeks. Diagnosticated typhoid. Wassermann found + + +. Rapidly cured by antisyphilitic treatment.

thought probable that the extract would be an efficient antigen. The tests thus far made have warranted this opinion. As the antigens are very easily and rapidly made in any laboratory, it is to be hoped that further trial will be made by others.

The following results shown in the tables in complement fixation with the various antigens prepared by the action of the digestive ferments on washed living bacteria, according to the method described, were obtained by Dr. Edward Johnson and Mr. George Gillman of the Pacific Wassermann Laboratory. Great credit is due them for the careful manner in which they observed all the precautions and used all the ordinary controls employed in the Wassermann tests.

one-half hour, and gave positive results. It was tested on one case of pneumonia only just before the crisis and gave + + + fixation. The antigenic unit was 0.1 c.c.

RHEUMATISM

A small number of cases of rheumatism were investigated serologically with extracts of various micro-organisms. The extract of the Poynton and Payne *Streptodiplococcus rheumaticus* was made from a single strain. Its antigen unit was 0.3 c.c. The extract of the streptococcus of endocarditis was also made from a single strain. Its antigenic unit was 0.2. On testing with the extract of another strain of the same micro-organism in several cases, the same results were obtained.

The therapeutic results in these cases of rheumatism, while not sufficient to prove the remedial value, are of interest as being slightly confirmatory of the correctness of the serologic diagnosis.

TABLE 5.—COMPLEMENT FIXATION WITH ANTIGENS FROM VARIOUS MICRO-ORGANISMS

Patient	Pneumococcus	Tuberculosis	Gonococcus	Streptococcus	Streptococcus Viridans Endocarditis	Diplostreptococcus Rheumaticus Poynton & Payne	Wassermann	Noguchi	Remarks
Pet.	— — —	— — —	+ — —	+ + —	— — —	— — —	— — —	— — —	Had gonorrhea four years ago, lasting two weeks. A year ago rheumatism began. Gonorrhea two months ago. Was first given gonococcus extract without effect. Was then given streptococcic extract with rapid improvement and cure.
McQ.	— — —	— — —	— — —	+ + —	— — —	— — —	— — —	— — —	Chronic rheumatism rapidly improved and cured by streptococcic extract.
St.	— — —	+ — —	— — —	+ — —	— — —	— — —	— — —	— — —	Extensive arthritis deformans of long duration. Slight tuberculosis.
Mor.	— — —	— — —	— — —	+ + —	+ + —	— — —	— — —	— — —	Chronic rheumatism for one year. Not treated.
Rey.	— — —	— — —	— — —	+ — —	+ + —	+ — —	+ — —	+ — —	Arthritis deformans of twenty years' standing.
K.	— — —	— — —	+ + +	+ — —	— — —	+ + —	— — —	— — —	Acute rheumatism in childhood to the age of 14. Again at 18 and again three years ago, followed by gonorrhea. Improvement following extract of *Streptococcus rheumaticus* (Poynton and Payne).
Miss F.	— — —	+ — —	— — —	— — —	— — —	+ — —	— — —	— — —	Chronic rheumatism. Roentgen ray shows infiltration of glands at the root of the lung. Rapid improvement after extract of *Streptococcus rheumaticus* (Poynton and Payne).
Kr.	— — —	— — —	— — —	+ — —	+ — —	+ + —	— — —	— — —	Chronic rheumatism. Not treated.
W.	— — —	— — —	+ + —	— — —	— — —	— — —	— — —	— — —	Gonorrhea five years ago, lasting seven or eight months. Rheumatism began three months ago. Improvement following gonococcic extract.
Ols.	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	Acute gout of right upper extremity. Numerous nodules in both ears.
Bick.	— — —	— — —	— — —	+ — —	+ + —	+ + +	— — —	— — —	Acute rheumatism improved following injections of rheumaticus extract so that he walked around, and the extract was continued. Ten days later a relapse as severe as the original attack occurred, showing he was not immunized.
Pip.	— — —	— — —	— — —	— — —	+ — —	+ — —	— — —	— — —	Acute rheumatism. Rapid cure following extract rheumaticus.

GONOCOCCUS

In the subjoined table (Table 1) the results of complement fixation with the McNeal antigen and with an extract prepared with pancreatin from mixed living gonococci are presented. Most of the cases have been observed by Dr. Martin Krotoszyner. The antigenic unit employed was 0.5 c.c. of the bacterial extract.

STAPHYLOCOCCUS

Tests were made in two cases only of staphylococcic furunculosis and gave positive results in both cases with antigen prepared from culture of staphylococci in the furuncle of one of the patients. The antigenic unit was 0.5 c.c.

PNEUMOCOCCUS

Antigen prepared from a single strain was tested on several rabbits that had previously been injected with cultures of the same strain heated to 80 C. for

275 Post Street.

Muzzling Dogs Lessens Rabies.—The department of health of New York City announces that of 1,200 owners of dogs summoned to court in September for permitting their dogs to go unmuzzled, eighty-three paid fines aggregating $1,034. The figures regarding rabies indicate that muzzling dogs has been effective. Cases of rabies found in animals decreased from sixty-four in the second quarter of 1914 to fifteen during the corresponding quarter of this year. There has also been a considerable decrease in the number of persons affected. The number of dogs examined during the past three months was 2,030, of which 218 were destroyed.

AN AMEBA IN SUPPURATIVE AND HYPERPLASTIC OSTEOPERIOSTITIS OF INFERIOR MAXILLA *

KENNETH M. LYNCH, M.D.

CHARLESTON, S. C.

In 1896 Flexner[1] reported an ameba found in artificially obtained pus from an abscess on the floor of the oral cavity. Doflein,[2] in 1901, observed a similar ameba in an abscess with fistulas opening on the right lower jaw. The latter case resembled, somewhat, the following, although there are certain differences in the two parasites observed:

History.—E. W., a negro woman, aged 23, servant, admitted to the Roper Hospital in Charleston, April 20, 1915, beginning about one year before had frequent attacks of toothache. The lower jaw on the left side began to swell about a month previous to admission, when she exhibited a hard nonmovable tumor the size of a hen's egg attached to the inferior maxilla. Nothing abnormal was noted in the mouth or throat. The cervical lymph nodes were palpable. The temperature, normal in the morning, went up to 99 and 100 in the evening.

A diagnosis of osteosarcoma was made, and the left half of the mandible resected and sent to my laboratory.

Examination of Specimen.—From articulation to canine tooth the bone was thick, with rough surface into which ran small clean-cut sinuses containing thick white granular pus. The thickening was most prominent about the middle of the body of the bone, where it was of tumorous appearance. Over this prominent portion on the outside was a hard fibrous mass attached to the bone and to the surrounding muscles. In this were several larger sinuses leading into the bone. Saw cut revealed the bone to be of a compact cancellous nature, like new growing bone, honeycombed with small pus sinuses. The first molar tooth was missing and the third was represented by a decayed root, level with the soft tissues of the gum.

Microscopically, the composition of the tumor mass was of newly formed and forming bone trabeculae, fibrous tissue, mainly old, encroaching on surrounding muscle, lymphocytic infiltration, largely in localized foci, and small areas of necrosis and pus in which were rounded hyaline nonnucleated bodies somewhat larger than leukocytes. The appearance was that of inflammatory overgrowth of bone and connective tissue of a progressive nature, showing areas of necrosis and pus formation corresponding to the previously mentioned sinuses.

Microscopic examination of the pus revealed no recognizable bacteria; nor did animal inoculation give any results. It contained in addition to granular materials, neutrophilic leukocytes and a goodly number of eosinophils, some recognizable tissue cells, and numerous ameboid cells. These, when rounded, were about 40 microns in diameter, with a distinct clear ectoplasm and coarsely granular endoplasm of refractile bodies. No nucleus was recognizable. These cells were ameboid, throwing out, slowly, large broad single pseudopodia which were seen to engulf red blood cells and leukocytes. The cell moved from place to place by projecting one of these pseudopods into which the endoplasm flowed, it then becoming the body.

Stained with Leishman's fluid, the cytoplasm was very faint, vacuolated, and contained red blood cells and fragments of leukocytes. No nucleus was observed. Unfortunately, these specimens were destroyed before I had completed my study of them or had opportunity to use other stains.

That this ameba was not of those commonly found in the mouth was plain to me because of its size, activity, character of endoplasm, and staining properties. It differed from Doflein's parasite in that it was sluggish in action and exhibited single large blunt pseudopodia and a distinct differentiation of ectoplasm from endoplasm, while the latter was more active than those of amebic dysentery and developed long finger-like pseudopodia of apparently the same appearance as the protoplasm in general.

Doflein conjectures that both his and Flexner's parasites were dysenteric amebas, although there was no history of dysentery in either case. Neither was there history of dysentery in the present instance, and the variance in morphology of the ameba connected with the history disputes such an opinion in this case.

That the ameba was the etiologic factor here cannot, of course, be said; but the absence of any other recognizable factor, the nature of the growth, the history of onset, and the decayed tooth as a possible port of entry, lend the suggestion.

* From the Department of Pathology and Research Medicine, Medical College of the State of South Carolina.

1. Flexner: Bull. Johns Hopkins Hosp., 1892, No. 25.
2. Doflein, F.: Die Protozoen als Parasiten und Krankheitserreger, Jena, 1901, p. 30.

THE SUGAR CONTENT OF THE BLOOD IN CERTAIN DISEASES OF THE SKIN

A PRELIMINARY REPORT *

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Since it is well known that diseases of the skin, such as furunculosis, occurring in various areas of skin are associated at times with a transient or even a permanent glucosuria, as in diabetes mellitus, and since it is known also that a hyperglycemia may be present, under certain conditions, even in the absence of a glucosuria, it occurred to me that it might be of interest to make investigations along these lines in certain dermatoses.

It was intended to ascertain, if possible, any changes from the normal, in those conditions in which the cause, or underlying etiologic factor, was more or less unknown. The tests, therefore, were made merely to answer the question whether there was an increase or a decrease in the sugar content of the blood, compared with the normal.

The cases were selected at random, but in practically all it could be assumed that there might be some disturbance in metabolism or some systemic disorder. The patients were selected from both sexes at the outpatient service of the Johns Hopkins Hospital, and nearly all were white adults. The blood was obtained, invariably from a vein in the forearm, approximately from one to three hours after the last meal eaten. This probably had some influence on the degree of glucose percentage. The urine was examined in every instance. The specimens were obtained after the venipuncture, and were examined at once for albumin by the heat and acid test, and for glucose by the copper sulphate-alkaline test (Fehling).

The method employed was a modification of the Benedict-Lewis procedure, as proposed by Epstein,[1] and carried out by specially designed apparatus. This method was found to be satisfactory because of its convenience, simplicity, and rapidity of execution. It was tested against the original Benedict-Lewis method

* From the Department of Dermatology, the Johns Hopkins University and Hospital.

1. Epstein, A. A.: An Accurate Microchemical Method of Estimating Sugar in the Blood, THE JOURNAL A. M. A., Nov. 7, 1914, p. 1667.

and found to vary only by a practically negligible factor.

Fifty cases were tested, including clinical examples of the following: acne vulgaris, psoriasis, eczema of various types, urticaria, erythema multiforme, furunculosis, hyperhidrosis, dermatitis herpetiformis, alopecia areata, rosacea, ecthyma and pemphigus foliaceus. The variations for the fifty cases ranged from 0.07 to 0.156 per cent., averaging 0.107 per cent. The accompanying table includes a list of the cases, with range of percentages and an average for each group. Since this is a preliminary report, it is realized that certain groups have too few representatives; but these hardly vary from the normal.

RESULTS OF TESTS IN FIFTY CASES

	Cases No.	Limits Per Cent.	Average Per Cent.
Eczema, vesiculosum, papulosum, seborrhoicum, squamosum and rubrum	18	0.08-0.156 (2 cases)	0.117
Psoriasis, localized and widespread	7	0.095-0.132	0.118
Furunculosis, localized and widespread	6	0.073-0.154	0.115
Dermatitis herpetiformis	4	0.07 -0.134	0.106
Erythema multiforme	3	0.106-0.146	0.131
Acne vulgaris, face and body	3	0.08 -0.12	0.95
Hyperhidrosis, palms and soles	2	0.122-0.127	0.124
Alopecia areata	2	0.124-0.126	0.125
Urticaria	2	0.113-0.142	0.127
Pemphigus foliaceus	1	0.101	0.101
Rosacea, face and nose	1	0.128	0.128
Ecthyma	1	0.07	0.07
Total	50	.....	0.107

This work was undertaken several months before the appearance of the paper of Strouse and his co-workers.[2] According to them, the limits of normal percentages of blood sugar are from 0.04 to 0.12, averaging 0.084 per cent., the upper limit being approached, depending on diet and especially after meals. Compared also with the normal (according to Benedict and Lewis) 0.09 to 0.11 per cent., it is noted that the values determined here are close to the upper limits, the slight increase being due probably to the time at which the blood was taken (postprandial), and to the unknown diet of the patients.

There was no glucose found in the urine in any case, and albumin was discovered in only a few instances; a few showed the presence of urates, all of which findings were considered of no importance so far as influencing the sugar content of the blood.

It may be concluded, therefore, that in a group of fifty cases of certain diseases of the skin, on an unknown ordinary diet, the sugar content of the blood, when examined after meals, showed practically no definite increase above the normal, although tending toward the higher percentage limit. And since the dermatologic manifestations of diseased conditions are frequently dependent in part on internal conditions, it is felt that a further study of this problem may throw light on certain forms of dermatoses in which a high sugar content will infer a probable alimentary hyperglycemia, the proper treatment of which may help solve the all-too-frequent difficulty of the dermatologic therapy.

922 North Avenue, West.

2. Strouse, Solomon; Stein, I. F., and Wiseley, Alan: The Accurate Clinical Study of Blood-Sugar, Bull. Johns Hopkins Hosp., 1915, xxvi, 211.

THE INTRASPINAL ARSENIC TREATMENT OF SYPHILIS

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The arsenic treatment of so-called nervous syphilis is closely identified with intraspinal injections of the arsenic combinations known as salvarsan and neosalvarsan. The various methods devised for these intraspinal injections were recently reviewed by Swift.[1] Of these methods, the most popular ones are those of Swift-Ellis and Ravaut,[2] while in Germany the methods of Gennerich[3] and Schubert[4] are preferred. I had the opportunity of studying the latter last summer at Hamburg, in Nonne's service and in the insane asylum of Friedrichsberg-Hamburg.

In Gennerich's method, 0.15 gm. of neosalvarsan are dissolved in 300 c.c. of normal sterile salt solution, of which 60 c.c. are introduced into the spinal canal by means of a syringe, after an equal amount has been withdrawn, and mixed with the normal salt solution.

Schubert uses nothing but the spinal fluid of the patient. He removes 10 c.c. of the spinal fluid, attaches to the needle a 40-cm. long rubber tube, to the free end of which a funnel-like retainer is fastened. Of the removed 10 c.c., he takes 3 c.c., in which he dissolves 0.045 gm. of dry neosalvarsan, which immediately becomes dissolved. Of this solution, from 0.1 to 0.2 c.c. are taken by means of a special pipet graduated in 0.01-c.c. divisions, and dropped into the retainer, which is lowered and thus gradually filled up with the cerebrospinal fluid. Raising the retainer, he lets the fluid flow back into the canal. The dose of neosalvarsan must be greatly diluted; therefore he withdraws at least 20 c.c. of the spinal fluid, into which he drops the solution containing 0.003 gm. of the drug.

Another precaution which Schubert takes is absolute dryness of all the instruments used for the injection. All the glasses and the tube are rendered absolutely dry, so that the patient gets nothing but the neosalvarsan dissolved in his own cerebrospinal fluid.

This method is quite simple, and I used it in my intraspinal injections, but simplified the method by abolishing the graduated pipets, funnel-like retainers, watch-glasses, etc.

The method as used by me is as follows:

1. A spinal puncture is made.

2. About 10 c.c. of the spinal fluid are withdrawn into a common small medicine glass, which was previously boiled and *dried* (on a flame).

3. Fifteen hundredths gm. of neosalvarsan are placed in another medicine glass, which has also been boiled and *dried*, and in which 50 drops of the spinal fluid dissolve this dose of neosalvarsan. The drops are taken from the 10 c.c. of the spinal fluid by means of a common medicine dropper which is thoroughly dried.

4. A rubber tube which closely fits the needle is attached to the latter while it is in the spinal canal, and the free end is connected with a large test tube (boiled and dried).

1. Swift, Homer F.: Intraspinal Therapy in Syphilis of the Central Nervous System, THE JOURNAL A. M. A., July 17, 1915, p. 209.

2. Ravaut, M.: Comment dépister la syphilis nerveuse, Ann. méd., 1914, p. 49.

3. Gennerich: Zur Technik der endolumbalen Salvarsanbehandlung, München. med. Wchnschr., 1913, No. 52.

4. Schubert: Zur Technik der endolumbalen Neo-Salvarsantherapie, München. med. Wchnschr., 1914, No. 15, p. 823.

5. Lowering the attached test tube, we allow the spinal fluid to flow into it until 20 or 30 c.c. have been removed.

6. Keeping the tube lowered and filled with the spinal fluid, we let in 1 drop of the neosalvarsan which we previously dissolved in 50 drops of the spinal fluid. One drop will contain 0.003 gm. of neosalvarsan.

7. Raising the tube, we allow its contents with the neosalvarsan to flow back into the spinal canal.

8. Lowering the tube for the second time, we allow the spinal fluid to run back into the tube, and raising it again we have the greatly diluted neosalvarsan back in the spinal canal.

9. It is desirable to keep the patient's back elevated for a few hours, but this is not necessary.

This method proved to be very simple, and does not require any special glasses, instruments or technic. Mulford's needle and rubber tube, which are supplied in the Mulford antimeningitis serum packages, are admirably fitted for these injections, but, of course, any other needle and tube may be used, provided they fit closely. If the dose of 0.045 gm. of neosalvarsan can be obtained, then only 15 drops of the patient's fluid are used for dissolving this amount; but we could not obtain less than 0.15 gm., this being the reason why we used 50 drops. As one patient needed only 1 drop, that is, 0.003 gm., of neosalvarsan, we could have injected fifty patients with the same solution. Indeed, we have sometimes injected as many as twelve patients, using one solution prepared from a spinal fluid of a single patient. That could do no harm, as every patient positively had some syphilogenous nervous lesion which in every case was proved by clinical and serologic examinations.

Schubert and other clinicians in Hamburg used a different vial for each patient, which they could very well afford, as their supply of neosalvarsan has been furnished by the hospitals, while our ward patients, always very poor, had to furnish the medicine at their own expense. The solution kept very well, sometimes as long as three hours, and could be carried from one ward to another, a distance of an entire city block, without any bad consequences.

The usual dose was 1 drop, that is, 3 mg., but frequently 6 and even 9 mg. were used. Only those patients received the injections who desired them, asked for them, and who did not benefit from usual antisyphilitic treatment.

From January to May of this year, forty-six injections were given to twenty-nine patients. Twenty patients had tabes in various forms, but all far advanced — ataxic and paralytic stages. Two had general paralysis with marked physical signs, as bladder, speech, pupillary disorders, etc. Six had cerebrospinal syphilis, also far advanced, and one had a gastric neurosis which first was interpreted as tabes, but had nothing to do with this disease.

The most frequent reactions to the injections were shooting pains in the legs, sometimes in the upper extremities, pain in the back and between the shoulders, headache, nausea and vomiting, retention of urine and slight elevation of temperature, not above 100.2 F. These complications were usually of short duration, except the headache, which in one case (general paresis) lasted about four days. As a rule, the patients would be up the next day, feeling well.

Any particular improvement in the subjective state of the patients I did not notice. In one case of tabes the gastric crises ceased after the injection for a few days, but soon returned with greater severity, and the patient refused another injection. Patients with bladder disorders, shooting pains and paresthesias would not get worse, but did not get better either, though the spinal fluid would show favorable biologic changes in regard to cell content, etc. The good results obtained by Schubert[5] in tabes and cerebrospinal syphilis, as well as by some other observers (Ravaut), were possibly due to the fact that their patients were amenable to any form of antisyphilitic treatment, and would therefore have improved under ordinary old methods with mercury and potassium iodid.

In advanced cases like mine in which the old methods failed to produce any curative effect, the neosalvarsan intraspinal injections proved of no value, though they were repeatedly given, in one case as much as eight times. The dose, as I said, was not below 3 mg., frequently 6 mg., and in one case in which eight injections were given, the dose was once 9 mg.

CASE 1.—This was a case of tabes, in the ataxic stage. The patient bore the injections very well and showed the usual after-effects, as shooting pains and some headache, which would soon disappear. Twelve days after the seventh injection (9 mg.), he was given by Dr. Grinker 30 c.c. of mercurialized human serum, which injection immediately was followed by complete paralysis of the lower extremities, and complete incontinence of the bladder and rectum. Nevertheless, eight days after this unfortunate injection and twenty days after the 9 mg. injection, we gave him 3 mg. of neosalvarsan. No particular complications followed, except slight headache and shooting pains. The paralysis of the legs seemed to manifest some slight improvement, the bladder and rectum disturbances having remained stationary.

In this case, the severe complications could not therefore be ascribed to the neosalvarsan therapy, but rather to the mercurialized serum.

It is still more difficult to interpret another case, also of tabes.

CASE 2.—A man, aged 38, entered the county hospital, Dec. 7, 1914, and was given mercury inunctions and potassium iodid internally until Jan. 16, 1915, when suddenly epileptiform convulsions set in which lasted for three minutes. They were accompanied by foaming, biting of the tongue, cyanosis and coma. The next day the convulsions reappeared, and were followed by profuse perspiration. Eight days later, January 25, 0.6 gm. of neosalvarsan was given intravenously without any untoward symptoms. February 19, 3 mg. of neosalvarsan were injected intraspinally, which injection was followed by gastric pain, vomiting for three days and somewhat thick speech. Five days later he left the hospital in good condition, but returned April 1, when he received an injection of mercurialized serum. This was followed by two more during the next two weeks (given by Dr. Grinker). Only the last injection was followed by severe headache and shooting pains. A month after the last injection (May 15), 6 mg. of neosalvarsan were given intraspinally, after which the patient vomited (eight hours after the injection), and convulsions set in which lasted for five hours. The next six days, however, the patient felt fine, when the convulsions reappeared, followed by stupor and death. The spinal fluid, during the convulsions and the neosalvarsan injections, was very bloody. As convulsions occurred during the mercury treatment (inunctions), it would be improper to ascribe their origin to the neosalvarsan therapy. Most probably the convulsions were due to paralytic attacks, the patient evidently having been suffering from taboparalysis.

5. Schubert: Ueber Technik und Erfolge der Neo-Salvarsanbehandlung syphilitischer Nerven- und Geisteskrankheiten (manuscript).

Aside from the two cases mentioned, we had no disagreeable complications, except those mentioned above and observed by everybody else. They evidently constitute the regular clinical picture following the neosalvarsan injections, being, as it were, a clinical reaction to the latter. They are pointed out by Swift, who says that a given dose may be well tolerated several times, but later may be followed by severe symptoms. He recommends, therefore, extreme caution in the injections and a dose not exceeding 0.5 mg. With such a small dose, Swift obtained in three patients out of thirty-four (the rest usually received intravenous and intraspinal injections together) quite encouraging results from the biologic standpoint (favorable changes in the cerebrospinal fluid). About clinical changes, Swift says only that he was "struck with many instances of parallelism between condition of the spinal fluid and general condition of the patient."

Giving intraspinal injections of neosalvarsan, I was interested not so much in the possible biologic changes of the spinal fluid as in clinical changes, which unfortunately were not very favorable, in spite of the large and repeated doses. The results, I must confess, were in the majority of cases much better from internal administration of plain arsenic, of arsenic trioxid, given in large doses according to a method used in the treatment of chorea and described by me some time ago.[6]

I have been using this method in my private and dispensary patients in the form of a 1:1,000 solution of arsenic trioxid (arsenic trioxid, 0.12; diluted hydrochloric acid, enough to dissolve; distilled water, 120.0), which is given once a day, after a meal, beginning with half a teaspoonful well diluted with water. During the following days the dose is each time increased by a half a teaspoonful until 6 or 7 teaspoonfuls are given to one dose (always well diluted with water), after which the dose is daily decreased by one half teaspoonful until the initial dose of one half teaspoonful is reached. If no changes in the patient's state are noticed, or no complications of the stomach (vomiting) or the urine (albumin) are present, the arsenic treatment is renewed in ascending doses until three or four or more courses are given.

That arsenic given internally may reach the nervous system is proved by a case of Comby,[7] whose patient, a 7-year-old girl, took in eleven days 4 grains of arsenic, and developed a myelitis (paraplegia, incontinence of bladder and rectum, etc.), of which the child recovered within three weeks. This method is practically devoid of any danger, as I never met any serious complications in spite of the fact that it was used in small children. Of late, I began to use the same method also on my county hospital patients instead of neosalvarsan injections, and had in many cases results not worse if not better than from neosalvarsan therapy.

31 North State Street.

6. Hassin, G. B., and Hershfield, A. S.: The Treatment of Chorea with Large Doses of Arsenic, Med. Rec., New York, 1910, lxxviii, 15.
7. Comby: Lançette française, Gaz. d. hôp., 1896, No. 83, p. 834.

School Medical Examination.—The Supreme Court of South Dakota has decided that a regulation of the school authorities of Aberdeen requiring that each child seeking admission to the schools must furnish a "physical record card" signed by a physician, was reasonable and valid, that it did not unlawfully bar any pupil from the schools, and that the school board had authority to adopt such a regulation. *Public Health Reports.*

VACCINE TREATMENT OF GONORRHEA *

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In a recent paper[1] I reported experiments on the gonococcus from which the following observations were made:

Autolysis is an invariable character of the gonococcus in the presence of excess of water, and is due probably not to enzyme activity, but to water hydrolysis and solution. By autolysis, I mean the solution or disappearance of the cocci which always occurs in the presence of excess of water, whether the water be in the culture medium, in the menstruum used for the preparation of a vaccine, or in the tissues of animals.

The process of autolysis, which is favored by the delicacy of the limiting surface and by the easy vulnerability of the coccus and its ready permeability by water, consists in edema followed by liberation of protein, or protein split products, compounds containing phosphorus, and fats.

The gonococcus protein, comprising 75 per cent. of the entity of the organism, is liberated into the salt solution or water during autolysis, and at first exists in chemical forms representing the sum of metabolic activity at the moment of liberation, but which undergoes fairly rapid changes in character, either by water hydrolysis, by the action of ferments not killed by high temperature, or by other agencies, so that in a short time the organic nitrogen has largely lost its identity as gonococcus protein and has assumed simpler chemical form.

The fats of the gonococcus, obtained as fatty acids, neutral fats and lipoids, are of large bulk, and a considerable proportion of the former are volatile and soluble in water and salt solution.

Suspensions of gonococci in water or in salt solution, as in the preparation of antigen and vaccines, undergo rapid, almost immediate, autolysis, accompanied by the changes above mentioned, at all temperatures below the coagulation point of protein. Heating at 60 hastens the process, while 70 coagulates the proteins.

Fresh suspensions or autolysates are fatal to guinea-pigs. The toxicity declines rapidly to a fairly constant level, then ultimately disappears. The toxicity appears to be associated in measure with the *character* of the nitrogen rather than with the quantity.

I have shown that fresh, live gonococcus culture suspended in water or salt solution and injected intravenously or otherwise into laboratory animals shows a toxicity almost inversely proportional to the length of time the cocci have been in suspension, being greatest within the first few minutes, diminishing rapidly by hours and days, and finally disappearing altogether. During this time the gonococci show, microscopically, progressive disintegration, swift at first, then more deliberate, until finally there are no cocci to be found. As I have shown, heat and chemicals may modify or check these changes, but only by damage to the cocci in other ways. Freshly prepared gonococcus vaccines are therefore toxic, while aged vaccines are inert.

Autolysis of whole gonococcus also occurs on wet culture mediums, in serum, normal, immune and inac-

* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.
1. Warden, Carl C.: Jour. Infect. Dis., May, 1915.

tivated, in all electrolytic solutions in which cell permeability is increased, and in all cavities and tissues of laboratory animals. Autolysis is prevented by alcohol, by electrolytic solutions of high ionic content, by fatty substances, by soaps and by hygroscopic nonelectrolytes, such as glycerin and syrup.

The viability of the gonococcus may be maintained for days in glycerin, lanolin, and cold cream, at room temperature. I believe such anhydrous substances to be frequently responsible for the dissemination of gonococcus infections.

It will be observed that gonococcus suspensions in water or salt solution are not unlike sterile autolysates of other cells, and consist of substances much changed from their former character in the living cocci. A question of importance is to what extent such suspensions may be expected to create active immunity in animals. I know of no way by which whole unautolyzed or live cocci may be introduced into an animal except by suspending them in glycerin, fats or neutral oils, or by transferring fresh culture material directly to the tissues. By all methods, lysis occurs in the animal in the same manner as in water or serum in vitro. Animals immunized with gonococcus suspensions in water or salt solution and with autolysates yield serum containing quite variable amounts of agglutinin, no definite germicidal substance, and irregular opsonic power. The immune serum fixes complement with gonococcus antigen, which is merely gonococcus autolysate. It is probable that the lysis following the introduction of live, unautolyzed gonococci into laboratory animals is of the same nature as that occurring in serum in vitro. Numerous observations on intraperitoneal lysis have shown that the primary products of dissolution act as aggressins. The cocci quickly enter the circulation and are found in the liver and spleen in all stages of lysis, but rarely within the leukocytes. It is probable that the immunity response to gonococci in animals gives true gonococcus antibodies only in part, the remainder, if any, being antibodies to products of lysis. In speculating on the rôle of gonococcus nitrogen in the body, a question rises whether the administration of vaccines in gonorrhea may not produce antibodies to the products of autolysis in large measure, and to true gonococcus antibodies in less. It is doubtful whether vaccine (autolysate) given to man and other animals occasionally produces substances in the serum which fix complement with gonococcus antigen (autolysate). By this I mean that the administration of vaccine to a normal individual, or to one suffering from gonorrhea, does not of itself bring about a positive complement-fixation test with the serum of that individual. Fixation of complement with the serum of individuals with gonorrhea does not occur until a stage of the disease is reached, the sixth to the eighth week, when probably lysis of the cocci in the tissues has begun or is increased. Such an assumption is certainly admissible, from the foregoing evidence.

Now, if the immunity response to vaccines is directed more against the products of lysis than against true gonococcus antigen, it is not unlikely that such antibodies may merely neutralize the products of lysis occurring from cocci at the site of disease.[2]

Not all vaccines are prepared in the same manner, but there are objections to all. Washed cocci have undergone extensive lysis with consequent liberation of fats and nitrogen, as I have shown by chemical examinations of the wash water. Repeated washing occasions further loss until nothing but granular material remains. It can readily be seen that the standardization of gonococcus vaccine by the method of counting is impossible save when the cocci have been altered, or fixed, by heat or chemicals. Suspensions heated to 60 show autolysis hastened, and 70 coagulates the proteins.[3]

In sensitized vaccines the cocci have yielded products to the serum, and there is no evidence to show that they have gained antibody from the serum. Such vaccines are merely gonococcus residue. Abundant evidence has shown me also that unautolyzed vaccine is toxic and only slightly greater in antigenic value than ordinary vaccine. My studies on autolysis led me at one time to believe that if a vaccine of whole, unautolyzed, unchanged gonococci could be produced, better results would be obtained in the treatment of gonorrhea by such a vaccine. Accordingly, I learned first how to cultivate the gonococcus free from autolysis, and later how to preserve the whole cocci in anhydrous menstruums. Vaccines were made of quickly dried gonococcus substance suspended in neutral oil; others of fresh unautolyzed cocci in pure glycerin and in neutral oil, and all were thoroughly tested out on animals and patients. In all cases, the results were the same; all were toxic, the glycerin vaccine more so than the oil, and appeared to have no effect whatever on the course of the disease. On the other hand it was plainly shown that whole, unautolyzed cocci, alive or killed, underwent autolysis when introduced into the tissues of the body exactly in the same manner as in fluids in the test tube, followed by toxic manifestations, local or general, slow or rapid, according to whether the menstruum employed was oil or glycerin.

The beneficial results following vaccines in gonorrheal rheumatism, for which there is some evidence, might appear to be contradictory to the ideas above expressed, were it not possible to explain them on the same hypothesis. Not infrequently, especially with freshly prepared vaccines, it has been noticed that the reactions following their administration to patients include pain in the joints. In animals inoculated with water suspensions I have noticed stiffness and apparent tenderness of joints, although no gross changes could be found. Serum from patients with gonorrheal rheumatism gives the largest proportion of complement fixation. The serum of goats immunized with fresh gonococcus suspensions in salt solution gives a precipitin response with gonococcus autolysates, fresh and heated to 75. This evidence, though inconclusive, nevertheless suggests that conditions about the joints may be more favorable to lysis of the cocci than in the tissues of the urethra, and that the products of lysis may contribute to the symptoms. The relief of pain following gonococcus vaccines is one of the most conspicuous results. Without carrying the argument further, the same explanation may suffice for other complications of gonorrhea, including salpingitis.

From the evidence submitted, it is assumed that the character of autolysis in the gonococcus renders

2. A matter of common observation has been that autolysates were distinctly inhibitory to growth of the gonococcus, and should conditions be at all comparable within the body and in artificial culture, it may be seen that such antibodies might not be incompatible with the continued existence of gonococci in the tissues.

3. Zinnser: Effects of Heat on Antigen in Precipitins and Agglutinins, Infection and Resistance, 1914.

immunity response of animals and man to injections of the organism unsatisfactory and incomplete. In other words, the organic nitrogen of the gonococcus does not seem to be altogether available as antigen. This assumption is strengthened by the fact that the nitrogenous portion alone of watery antigen made by me for complement fixation is much poorer in antigenic power than the whole autolysate. It was necessary, then, to search for some substance other than protein, or its split products in the autolysate or watery antigen which, with immune serum, would fix complement. These substances were found to be the fats of the gonococcus, since these substances, chemically isolated from the organism, and suspended in absolute alcohol, possess a much higher antigenic power than the watery antigens of commerce.

The question of whether there may exist with these fats an inseparable and essential nitrogen *"rest"* need not concern us at the present time.

I submit a report, preliminary to a forthcoming paper on the subject by L. E. Schmidt and myself, on complement-fixation tests in which the best of the commercial antigens and my own were used parallel. Up to the present, 279 tests have been made and the results show indisputably the importance of the fats in the reaction. The serums of 50 normal individuals gave no fixation, nor did the serums of 47 persons with diseases other than gonorrhea.

In acute cases under one month, the commercial antigen gave positive tests in 20 per cent., the lipoid antigen in 50 per cent.

In subacute cases, up to six months, commercial antigen in 20 per cent., lipoid in 75 per cent.

In cases of long standing with repeated or recurring attacks, commercial in 33 per cent., lipoid in 65 per cent.

In past cases—over six months to thirty years—of doubtful character, commercial in 16 per cent, lipoid in 50 per cent.

In children, all stages included, commercial in 10 per cent, lipoid in 66 per cent.

With my lipoid antigen, complement fixation appears at an earlier period, occurs with greater regularity during the disease, and endures longer than with commercial antigen. All watery antigens are likely to show periods of alternating positive and negative reactions during an attack of gonorrhea, in which the administration of vaccine takes no[4] part. The lipoid antigen shows less fluctuation of this character.

The facts shown in this preliminary report appeared to me to place these fatty substances in an important light from an immunologic view,[5] and I have sought to test their antigenic power as a therapeutic agent in the treatment of gonorrhea. This was specially desirable because of the unsatisfactory results in the use of autolyzed and whole, unautolyzed, gonococcus vaccine. It was found that the fatty moiety is nontoxic for normal man and other animals, even when given intravenously in large doses.

The results, briefly summarized, of the treatment of gonorrhea with gonococcus fats are to be regarded as tentative, and constitute a preliminary communication on the subject.

The cases treated by me thus far comprise acute, chronic, simple and complicated, in men and infant girls. In all, the subcutaneous inoculation of the fats has been followed by marked improvement, and in some by unodubted cure.

The chronic cases, in which there are posterior involvement, with slight but constant discharge containing gonococci in smear and culture, have shown disappearance of cocci in discharge, and symptoms, following one to three inoculations. The acute cases, taken within the first forty-eight hours of the discharge, showed complete disappearance of gonococci in smears and cultures, and entire absence of the discharge within a week following one inoculation. Between these extremes are those acute cases showing well-established infection, copious discharge, and considerable edema, which have required more frequent inoculations with increasing doses, and which constitute an improved, but unfinished series, owing to lack of material.

There has been a slight local reaction, consisting in reddening and swelling of the subcutaneous tissues, which quickly subsided. In some instances a constitutional reaction characterized by chilly sensations, anorexia and some fever appeared in from six to eight hours. This reaction has not been constant, but is followed by marked clinical improvement. The first indication of improvement is the diminution in the number of cocci in the exudate, which in some cases constituted a striking sign. The coincidence of the disappearance of cocci and the constitutional reaction, together with my experience with anaphylactic reactions in animals following the administration of fresh gonococcus autolysates, or following lysis of whole cocci in vivo, has led me tentatively to infer that the reaction in question may be due to the sudden lysis of the cocci in the body of the patient.

1310 Hill Street.

4. Irons and Nicoll: Jour. Infect. Dis., March, 1915.
5. Meyer, Kurt: Antigenic Nature of Lipoids, Ztschr. f. Immunitätsforsch. u. exper. Therap., xix, 20.

ABSTRACT OF DISCUSSION

DR. J. A. FULTON, Astoria, Ore.: I have done no work in this line. I believe, however, that when one in the profession finds that which he thinks is of consequence it is his duty to present it. Owing to the low vitality of the gonococci, acute gonorrhea should be easily checked with injections, were it not for the fact that by the time the disease manifests itself the bacteria have buried beneath the epithelium, where they are protected.

The urethra will stand a temperature of 120 Fahrenheit without injury. I have demonstrated that with a bougie heated to 120 F. in the urethra; a thermometer placed alongside of the urethra with the skin folded over it, a temperature of from 104 to 106 was shown, indicating that heat penetrated living tissues and raised the temperature of the skin from 5 to 7 degrees, and showing that even if the bacteria do bury under the epithelium, the heat surely reaches them.

Heat must be used carefully and accurately. One degree difference in temperature may make for either success or failure, just as one more grain of a drug in solution may determine whether your patient is cured or killed. This I wish to impress on every one who attempts the use of heat for the cure of disease. The method followed in making applications of heat to the urethra is this: the bougie is so constructed as to allow the circulation of water from one end to the other. At the entrance and exit of this circulating water is placed an ordinary pair of irrigating thermometers so arranged as to show the temperature of water as it enters the bougie and also at the point of exit, so one may know always the exact temperature of the bougie within the urethra. The water is heated in any convenient way, but is kept at such a temperature all the time, so as to show 120 F. at point of entrance. The urethra is washed out with warm boric solution, and with the patient in a recumbent

position the bougie is introduced down to the cut off muscle, and the heat is turned on. The application should last for at least thirty minutes. The temperature of the bougie should not be allowed to vary. It should always show 120 or within a fraction of that point. After this application, the mucosa where touched by the bougie is slightly swollen, and there is some discomfort on urination. The discharge changes to a watery mucoserous character and disappears in from ten to fourteen days as a rule.

My experience convinces me that almost every case of acute gonorrhea, that is, cases in which the disease has not gone into the deep urethra, may be aborted, and many cases of chronic disease cured, through the proper application of heat.

DR. FRANK HINMAN, San Francisco: The paper would seem to have two practical lines of application: in the first place in treatment and in the second place in diagnosis. The subject of immunization is a very complex one. There are two principal forms, active and passive immunization. In passive immunization the specific serum that has been produced by active immunization of animals is injected and exerts directly its antitoxic powers. Such passive immunization is possible for those organisms only which secrete a soluble toxin, such as diphtheria, tetanus, etc. Passive immunization cannot be produced with gonococci, for the reason that the gonococcus secretes no toxin, but produces injury, possibly after death or autolysis. The immunity of diphtheria is an antitoxic immunity, whereas immunity in the same sense is never established against the gonococcus, but is bactericidal through the interaction of immune substances and complement. Active immunization of the bactericidal form has been shown to be of practical value, particularly for typhoid prophylaxis, and more recently by using Gay's sensitized vaccine, for acute typhoid, for furunculosis, etc. The failure of gonococcus vaccine as an active immunizer and of the gonococcus antigen as a deviator of complement, as usually used, has been beautifully explained in this paper of Dr. Warden. The action of the gonococcus is evidently twofold; by injury from substances of autolysis, and by injury from the true gonococcal amboceptor. The fatty and lipoid extracts, according to Dr. Warden, are nontoxic, but antigens and vaccines made of these lipoids and fats are much more active than the autolysates. These lipoid substances may have the same side-chain grouping as the true gonococcal amboceptor, since they are so much more active than the autolysates, and would be, in a way, analogous to the toxoids in diphtheria immunity. Now, if by the use of these lipoids we can get the gonococcus in a nontoxic but specific form, we will then be in a position more correctly to diagnose gonorrhea and to use vaccines satisfactorily in the treatment of acute gonorrhea and gonorrheal complications.

DR. JOHN CAMPBELL SPENCER, San Francisco: Dr. Warden's contribution practically relegates to the scrap heap all products of the views regarding vaccines and watery suspensions with which the market is drugged at the present time. It is an eloquent treatise on the relative inefficiency of our therapeutic attempts at the present time to treat gonorrheal infection by vaccines. Personally I am glad that I have been present to listen to Dr. Warden's elucidation of this subject, because it looks as though we were entering on a new epoch in our treatment of gonorrheal infection. It will be of great benefit in the elimination of this scourge of the human race.

DR. LOUIS E. SCHMIDT, Chicago: I have been fortunate enough to be with Dr. Warden in his laboratory work and to supply much of his clinical material. The purely scientific part of the article I do not wish to discuss, but it seems to me to be the most thorough explanatory article on this subject. It seems to set forth very clearly, at least to me, the reason why we have had so many failures in clinical treatment of patients, and the failures of the gonorrheal complement tests are accounted for. We know that there are any number of instances in which the test has not given us a satisfactory answer. It has always been rather surprising that where we have been able to find gonococcus in culture and in smears, the test has frequently been negative. This holds true in connection with the work in children. The explanation given here clears up the question perfectly to me and gives us a basis for an answer regarding our failures.

Regarding the ordinary vaccine treatment of gonorrhea and its complications, it has practically been relegated to the background. It has been attended with few satisfactory results. Dr. Warden in this paper states that with the old vaccines there have been a limited number of cases in which the results are satisfactory. Certainly the vaccine treatment of gonorrhea, and its complications, is not as satisfactory as the vaccine treatment in certain other conditions. The explanations he has given certainly help to clear up the subject. The vaccines that are on the market at the present time do not adhere to any theories that Dr. Warden has laid down. How do they act? Certain results are gained by giving certain remedies without any known reason therefor. The answer always is, of course, that the results are satisfactory. It is far more satisfactory to all of us to follow the reasons why we get unsatisfactory as well as satisfactory clinical results.

The antigen of Warden is unquestionably far superior and gives more accurate results than the watery antigens on the market. As to treatment, the number of cases up to the present time is limited. However, they go into hundreds, and comparing the results with all other similar methods of treatment I can personally state that in this series of cases which I have had under my observation they are markedly different and more satisfactory.

DR. LEWIS WINE BREMERMAN, Chicago: If Dr. Warden has all that he claims, we have made a definite advance in the therapeutics of gonorrheal infection. We all have used commercial vaccines and discarded them, using the antigens which were manufactured, and discarding them, because we did not get the proper results. Gonorrheal complications and the sequelae constitute the majority of cases of the genitourinary specialist. If we can advance along the line of treatment we are doing something that will be for the benefit of a large number of people, as well as to the medical profession. I hope and trust that he has an antigen that will give all of the good results he claims for it, because I have worked along this line myself in my own laboratory with commercial antigens with very unsatisfactory results. I cannot see why the complement fixation tests for gonorrhea cannot be made as satisfactory as the complement fixation test for syphilis. If we can prove up the complement fixation equally with syphilis we are advancing an excellent method of diagnosis.

DR. FRED R. CHARLTON, Indianapolis: I am glad to add my word of gratitude to Dr. Warden for what he has done. I have been one of the discouraged ones, having used the various products seriatim, as they have been offered, without any clearly defined good results whatever. If the treatment that Dr. Warden outlines here proves satisfactory, I am going to feel a little more sanguine as to the general procedure. Such work as his again shows the folly of plunging the profession into "fads" before they are studied. Vaccinotherapy has been nothing less than a craze heretofore. Perhaps some benefit may yet be derived from a Neisser bacterin. To date I have seen none.

DR. GRANVILLE MACGOWAN, Los Angeles: There is no disease civilized man suffers from that causes half the misery that gonorrhea does. Anything that serves to make it more rare, or make it more readily curable, and to relieve the troubles which come from it, is a boon to mankind.

The thing that impressed me most in this admirable paper was the significance of the keeping alive of the gonococci by fats and greases. I think that the usual advice to men is to anoint themselves well with fats before coming in sexual contact with their female companions, and then to wash themselves thoroughly afterwards. One can very readily see how if a free use of fat is made by the male or female, and it is not thoroughly removed immediately after the sexual congress, that if one or the other of the participants has gonorrhea the other is pretty sure to have this disease

within a few days after the congress. The second point brought out shows why we have all failed so markedly to cure or relieve gonorrhea with vaccines.

DR. CARL C. WARDEN, Ann Arbor, Mich.: There are two points that I think need emphasizing. One is in regard to the presence or absence of protein or nitrogen in these lipoids. We cannot absolutely say that nitrogen is wholly excluded from this product, no matter how perfect our chemicals may be. I may say that this nitrogen, if it exists, is one of the essential parts, coupled with the fats.

In regard to the complement fixation, it seems very strange that we do not obtain a complement fixation test at all times during the course of gonorrhea. The question arises: why do we not, especially in the florid stages of gonorrhea, obtain a higher percentage of complement fixation test than we do. We shall always be embarrassed by this fact. I think the reason for it is fairly evident. Man is almost wholly immune to gonococcus to begin with. There are very few tissues left in the body on which the gonococcus is able to exist. The blood stream occasionally shows gonococcus infection but these cases are extremely rare. Now, then, those positions in the body that are subject to gonococcus infection happen to be extremely remote from the great laboratory of antibody formation, and for this reason it is a long time before the fluids of the body are enabled to form antibodies against the coccus. It is only when the disease is beginning to get pretty well along, in from the fourth to the eighth week, that complement fixation appears as a really established thing. The greater the amount of antigen the coccus gives to the body as a whole, in the great laboratory of antibody production, the sooner we will find complement fixation positive. When the deeper structures of the urethra become involved and the complications of gonorrhea appear, and when the general conditions become manifest, then is the time we have the largest per cent. of complement fixation. These conditions, I think, we shall always have to contend against, and we shall never be able to find antigen which will fix the complement under all conditions. The old watery antigens act variously, according to their fatty contents. A new arrangement of the fats and new lipoids will fix complement in the largest percentage of cases. There is abundant work to be done on the subject..

DR. FRED R. CHARLTON, Indianapolis: May I ask Dr. Warden whether in his therapeutic experiments he has confined himself to autogenous or the heterogeneous?

DR. CARL C. WARDEN: All strains of gonococcus. I have used every one that could be obtained in the ordinary course of the examination of patients. I have succeeded in getting together probably forty or fifty different strains. The work of Torrey, and a good many others, has shown that if a dozen or more strains are employed, those strains will probably embrace all the variations. I feel that by having a large number of strains I have covered all the different varieties that might occur. I do not attach any particular significance to autogenous vaccines. I think better results are obtained from using many strains than one.

Experimental Vivisection and the Rights of Animals.—I cannot argue with the man who insists that his dog and his hog are as good as he is; that he has no right to restrain the one or to eat the other. If he refuses to eat meat, or eggs, drink milk, use leather, wool or other animal products for clothing or shelter; if he refuse to make counter attacks against the lions or serpents which attack him, he is consistent; I cannot argue with him; I can merely watch him go his way in the procession with the trilobite, the ichthyosaurus and the dodo. But intensely practical questions arise and must be met. And the life of a relatively few animals is placed against the life and health and comfort of the human race. The antivivisectionist insists that even if you grant that the injury to the guinea-pig or the rabbit or the horse will save the life of a child, you have no right to save it in that way. If there is not room in the life-boat for the woman and the dog you have no right to push out the dog to make room for the woman.—Samuel S. Maxwell, *Science*.

PERFORATION OF THE BILIARY TRACT

REPORT OF TWO CASES

HOWARD L. BEYE, M.D.

IOWA CITY, IOWA

Perforation of the biliary tract is so infrequent as to warrant the reporting of unusual cases. In the following two cases of perforation of the gallbladder, the patients were operated on by Dr. C. J. Rowan in the surgical clinic of the University of Iowa.

CASE 1.—*History.*—L. E., schoolboy, aged 11 years, referred by Dr. Sinning of Iowa City, on the afternoon of Sept. 7, 1914, while playing, received a blow in the abdomen from one of his playmates. This caused him to faint, and after gaining consciousness he was in so much pain that he screamed and had to be carried home. During the following night he complained of a great deal of pain, and was very restless. The next morning he vomited profusely, and the pain became worse on the left side, and was more marked here than on the right. The temperature ranged between 100 and 101 on this day. The bowels refused to move even with enemas and after calomel. There had been no chill.

The past history was negative, except that about two months before, the boy had received a blow in the abdomen, at which time he was sick for three days with a high fever and vomiting. The bowels were moved with difficulty. Following this he was apparently perfectly well until the present trouble.

Examination.—The patient was brought to the University Hospital at 8:30 p. m., September 8. At this time the temperature was 100.8, pulse 100, and respirations 40. His face had a drawn, anxious look, and the respirations were rapid and shallow. He preferred to be on his side with the thighs and knees flexed, and complained of pain in the abdomen when moved. The walls of the abdomen were rigid; this was perhaps most marked in the right upper quadrant, though the patient complained mostly of pain in the left side. There was dulness in the right upper quadrant. No palpable masses. No cough. Heart and lungs negative. Leukocyte count 21,300. A diagnosis of ruptured appendix and general peritonitis was made.

Operation.—Under ether anesthesia, a midline incision was made below the umbilicus. There was properitoneal edema. The abdomen contained a large amount of bile-stained fluid, and considerable fibrin in plaques. The proximal half of the small intestines was distended, and the distal half collapsed. The intestines were examined for perforation, and none found. The incision was carried up to the right of the umbilicus to the gallbladder region. The gallbladder was found to be thickened and adherent to the liver, and contained a single perforation in the fundus from which pure bile was pouring. No stones were found. A rubber tube drain was led down to the perforation, together with a cigaret drain and a strip of iodoform gauze. A rubber tube drain was led from the pelvis at the lower end of the incision. The usual closure was made.

Course.—The patient was placed in Fowler's position and given normal salt solution by rectum, and nothing per mouth. Recovery was uneventful. The patient left the hospital on the fifteenth day.

The interesting point about this case aside from the perforation is the chronic cholecystitis present in a child of 11 years. The relationship between the condition of the gallbladder and the injury received two months before the perforation is problematic. At that time the patient might have had an acute cholecystitis which was followed by gallbladder changes which predisposed to later perforation, or he might at that time have had a perforation of the gallbladder with a localized peritonitis which resolved. There is no his-

tory of typhoid fever, and there were no attacks of tonsillitis to account for the gallbladder infection.

CASE 2.—*History.*—Mrs. M. M., housewife, aged 57, referred by Dr. A. R. Lynn of Marshalltown, for several years had occasional attacks of belching of gas, sometimes with vomiting, independent of meals. In February, 1913, she suddenly had a severe tearing pain under the right costal margin, radiating to the pit of the stomach. Following this she vomited profusely for several hours. The pain lasted an hour or more, caused her to cry out in agony, and was finally relieved by a hypodermic. Four weeks following this attack she became jaundiced, and this condition persisted until the next fall. In July, 1913, she had a similar attack.

Ever since the first attack the right side has been tender, and a swelling gradually formed, pointing in the right flank above the iliac crest. This finally approached the surface, the skin overlying became reddened, and it was lanced. An odorless fluid was obtained, at first thin and yellow, and later thicker. This gave her immediate relief from her constant ache and pain. There has been a persistent discharge of a mucous secretion ever since, and recently she passed four wheat-sized calculi. The general condition was good except for an increasing gnawing, burning sensation in the epigastrium, not referable to food taking.

Examination.—This was negative except for the abdomen. In the right side, between McBurney's point and the gallbladder region, there was a palpable mass about the size of a small orange, quite tender. Leading down to this mass was a sinus from which a small amount of light yellow tenacious fluid was discharged.

Blood: Hemoglobin 78 per cent. (Sahli), leukocytes 9,300.

Gastric Analysis: Seventy-five c.c. in forty-five minutes. Total acidity 100. Free hydrochloric, 68. No blood.

Urine: Negative.

A diagnosis of mucous gallbladder fistula following perforation was made.

Operation.—Sept. 28, 1914, under ether anesthesia, a right rectus incision was made above the level of the umbilicus. The gallbladder was long and narrow, and was adherent slightly to the omentum, and at the fundus to the abdominal wall at the inner end of the fistulous tract. A large mulberry stone was impacted in the cystic duct. The gallbladder was excised from its connection to the abdominal wall, and cholecystectomy performed. Tube draining was carried to the stump of the cystic duct, and an iodoform gauze drain through the sinus.

Course.—This was uneventful except for the formation of a hematoma in the operative wound, and the passage of a small calculus from the old fistulous tract, following which the latter healed. The patient left the hospital Nov. 3, 1914.

One of the interesting points about this case was the very slight amount of adhesions around the gallbladder, considering the extent of the diseased condition which must have been present during the period preceding the discharge of the abscess through the abdominal wall.

Measles.—The essential points in regulations for the control of measles are: The case shall be recognized and isolated at the earliest possible moment; the premises on which the case is isolated shall be placarded; the patient shall be isolated for at least five days after the appearance of the exanthem; adults and children who have previously had the disease need not be restricted, but it is advisable to warn them as to the slight possibility of second attacks, and keep them under observation; children who have not previously had measles and who are in contact with cases, need not be restricted for seven days after contact, but should thereafter be isolated for at least ten days and carefully observed. Disinfection after measles is useless and unnecessary. Transmission of measles by third persons or fomites must be exceedingly rare, if it occurs at all.—Harold Farnsworth Gray, *Jour. Infect. Dis.*, November, 1915.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

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W. A. PUCKNER, SECRETARY.

STAPHYLOCOCCUS VACCINE (See N. N. R., 1915, p. 319.)—Swan-Myers Company, Indianapolis.

Swan's Staphylococcus Bacterin (No. 37).—Marketed in packages of six 1 Cc. vials, each containing 300 million Staphylococcus pyogenes albus; also in 20 Cc. vials, containing 300 million Staphylococcus pyogenes albus per Cc.

STREPTOCOCCUS VACCINE (See N. N. R., 1915, p. 322).—Swan-Myers Company, Indianapolis.

Swan's Streptococcus Bacterin (No. 43).—Marketed in packages of six 1 Cc. vials, each containing 120 million Streptococcus pyogenes; also in 20 Cc. vials, containing 120 million Streptococcus pyogenes per Cc.

CALCIUM PEROXIDE (See N. N. R., 1915, p. 230).—The following non-proprietary preparation has been accepted:

Calcium Peroxide, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

SODIUM PEROXIDE (See N. N. R., 1915, p. 232).—The following non-proprietary preparation has been accepted:

Sodium Peroxide, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

ZINC PEROXIDE (See N. N. R., 1915, p. 234).—The following non-proprietary preparation has been accepted:

Zinc Peroxide, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

ETHYL SALICYLATE (See N. N. R., 1915, p. 272).—The following non-proprietary preparation has been accepted:

Ethyl Salicylate, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

OSMIUM TETROXIDE (See N. N. R., 1915, p. 225).—The following non-proprietary preparation has been accepted:

Osmic Acid, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

SODIUM OLEATE (See N. N. R., 1915, p. 348).—The following non-proprietary preparation has been accepted:

Sodium Oleate, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

THIOSINAMINE (See N. N. R., 1915, p. 361).—The following non-proprietary preparation has been accepted:

Thiosinamine, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

UREA (See N. N. R., 1915, p. 365).—The following non-proprietary preparation has been accepted:

Urea, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

SODIUM CACODYLATE (See N. N. R., 1915, p. 49).—The following dosage forms have been accepted:

Ampuls Sodium Cacodylate, Mulford, 7¾ grains.—Each ampule contains sodium cacodylate 0.5 Gm. (7¾ grains). Prepared by H. K. Mulford Co., Philadelphia.

Ampuls Sodium Cacodylate, Mulford, 15 grains.—Each ampule contains sodium cacodylate 1 Gm. (15 grains). Prepared by H. K. Mulford Co., Philadelphia.

SOLUTION PITUITARY EXTRACT (See N. N. R., 1915, p. 223).—The following dosage form has been accepted:

Ampuls Solution Pituitary Extract, Mulford, 0.5 Cc.—Each ampule contains solution pituitary extract 0.5 Cc. Prepared by H. K. Mulford Co., Philadelphia.

Therapeutics

TETANUS

The war has shown two very important facts concerning this infection: 1. The germ is more or less universal in the regions of warfare. 2. The results of its infection may be made negligible by the preventive use of tetanus antitoxin. A brief review of this disease may be of interest.

Hill[1] found that tetanus is more frequent in the tropics than in temperate climates, and that in the latter climates 86 per cent. of all cases are traumatic in origin.

The incubation period of acute tetanus is from one to ten days, and of subacute tetanus from ten to twenty days. Fifty per cent. of all cases develop between the sixth and ninth day, the majority apparently on the seventh day after infection. Acute tetanus lasts from one to ten days, and subacute tetanus from ten to twenty days. Not until the patient has lived until the tenth day of the disease is there an equal chance for life. After the tenth day the patient's chances of recovery increase day by day.

There is probably always more or less leukocytosis in tetanus, and Hill found the average count to be 13,000. The eosinophils seem to be diminished in number.

The tetanus bacillus is a cylindric rod, larger at one end than the other, and is an anaerobic germ. It is constantly present in the dirt of cities and on most country roads, as well as in barns and pastures. Noble[2] has recently shown that this bacillus occurs in the intestines of otherwise normal animals, and he found the germ in the feces of eleven of sixty-one horses examined. Further examination of these infected animals showed that the germ could disappear in a few weeks, but could also remain present as long as four months. Such animals become tetanus carriers,[3] and are a constant menace to other animals which may receive injuries, and to their drivers and hostlers, who may have slight wounds on their hands. These tetanus-carrying horses infect the dirt of the fields or streets on which they work or travel.

The reason for the perpetual danger from the tetanus organism is that it will live, when not subjected to intense light or heat, for years. The germ has also been found in the feces of cows, and has even been found in the feces of man.[4] Animals obtain the bacillus from their food, probably principally from infected grass and hay. When it is found in the feces of the human being, he has probably obtained it from eating contaminated uncooked vegetables.

This bacillus gains entrance to the system almost always through a wound or abrasion, and, as has long been recognized, the most frequently infected wounds are contusions and crushing or lacerating wounds, especially those that occur from sliding, grinding and friction injuries in the streets and from lacerating wounds acquired in warfare, explosions, Fourth of July injuries, etc. At first the infection is a local one, and it is stated that the bacilli do not often wander from the point of infection; but they soon produce their toxins, which cause the general disturbance.

As this germ grows without air, it is evident, as urged by Mühsam,[5] that infection with other bacteria, pus germs, etc., which will use up the oxygen in the tissues, or in a more or less closed wound, will thus aid in the growth of the anaerobic tetanus bacillus. Also, the destroyed tissues at the base or around the wound should be very carefully removed, as such structures, with their impaired circulation, instead of normally combating infection, promote it. Mühsam also urges flushing suspected wounds with oxygen, perhaps well furnished by hydrogen peroxid solutions, as oxygen inhibits or stops the growth of the tetanus bacillus.

The toxins of tetanus bacilli ascend the motor nerve sheaths and thus reach the spinal cord. They unite with nervous tissue and seem to remain in a more or less fixed combination; hence the difficulty of the tetanus antitoxin combating the toxin that has become thus combined. Prevention of tetanus by the use of antitoxin is easy; the cure of tetanus with antitoxin is difficult. It is probably only late in the disease that the toxins circulate in the blood. Sinigaglia[6] found the tetanus bacillus in the blood in a case of slow infection.

The beginning symptoms of poisoning from this germ are aches and pains in the muscles, with a general lassitude, some headache, and soon some stiffness of the muscles of the back of the neck, face and jaw. The wound or source of infection may show no change; in fact, may apparently be healed. The more or less permanent contraction of some muscles and the convulsions of tetanus are too well understood to need description. Spasm of the sphincters may make urination and defecation almost impossible. The mind generally remains clear, unless there is very high temperature, which is one of the causes of death. Death may occur during a convulsion from spasm of the diaphragm or spasm of the laryngeal muscles, or it may occur from exhaustion.

It was for many years thought that tetanus antitoxin was of no great value when the disease was positively in evidence. It was considered and taught that it was too late to expect any antitoxin activity. Therefore, it is very encouraging, in the treatment of this disease, to note that Irons[7] has found in animal experimentation that antitetanic serum will save life when tetanus has already developed, and therefore should perhaps not infrequently save life in the human being. If the patient cannot be treated before serious intoxication of the central nervous system has occurred, the toxins, Irons believes, may be neutralized by a large intravenous injection combined with an intraspinal injection of the antitoxin.

Nicoll[8] has determined by animal experimentation in the Research Laboratory of the Department of Health of New York, in conjunction with Dr. William H. Park, and also by clinical experience, that from 3,000 to 5,000 units of antitoxin should be injected into the lumbar region of the spinal canal as soon as tetanus is diagnosed. This injection should be done under an anesthetic, to inhibit any possible convulsion during the injection. The volume of the fluid injected should be "brought up to 10 to 15 c.c. by the addition of sterile normal saline, the exact amount being regu-

1. Hill, E. W.: Tetanus. Arch. Int. Med., December, 1911, p. 747.
2. Noble: Jour. Infect. Dis., 1915, xvi, 132.
3. Tetanus Carriers, editorial, The Journal A. M. A., May 29, 1915, p. 1850.
4. Pizzini: Riv. d' ig. e. san. pubb., 1898, x, 170.
5. Mühsam: Berl. klin. Wchnschr., 1914, li, No. 45.
6. Sinigaglia: Riforma med., April 24, 1915.
7. Irons, E. E.: Tetanus and Antitetanic Serum, The Journal A. M. A., May 8, 1915, p. 1552.
8. Nicoll, Matthias: Intraspinal Administration of Antitoxin in Tetanus, The Journal A. M. A., June 12, 1915, p. 1982.

lated according to the age of the patient and the amount of spinal fluid withdrawn." At the same time he advises the injection of 10,000 units of antitoxin intravenously. The spinal injection dose should be repeated in twenty-four hours, and a subcutaneous injection of 10,000 units should be given three or four days later. Nicoll finds that the death rate has been reduced by this method of treatment of those who already show symptoms of tetanus.

These investigations, with the added clinical experience, would seem to make it doubtful if subcutaneous injection alone of antitetanic serum could cure tetanus, although Comby[9] states that he has cured three cases of tetanus in children by the subcutaneous injection of antitetanic serum.

Subsequent injections of antitoxin, especially when given intravenously, can cause anaphylaxis, sometimes severe; and Simon[10] thinks that injections later than the tenth day become dangerous from the standpoint of being likely to produce anaphylactic shock.

It has recently been shown[11] that if the tetanus antitoxin is injected into the tissues surrounding the wound soon after the injury, tetanus will be prevented, even if the tetanus bacillus is later recovered from the wound. Teutschlaender[11] states that if, in such cases, a little stiffness or tendency to stiffening of the muscles of the part injured begins, he immediately gives another dose of antitoxin.

The prophylactic dose of tetanus antitoxin should be about 1,500 units, given subcutaneously, preferably in or about the region of the injury, and this should be given whenever the character of the injury or the region in which the injury is received presents any possibility of tetanus infection. This dose can be repeated in a few days if deemed advisable. The serum may also be perfused into the open wound, but the antitoxin powder applied to the wound can probably not be relied on as an effective prophylactic. An antitoxin impregnated pad is described by Robertson.[12]

As in administering diphtheria antitoxin, it should be ascertained if the patient is susceptible to emanations from horses or stables; if he shows hay fever and asthma symptoms from such emanations, it is unwise to administer horse serum, especially as a prophylactic for something that may not occur.

The newest of the drug treatments of tetanus is that by magnesium sulphate. Solutions of this salt are injected into the spinal canal, and Eunike[13] injects 10 c.c. of a 10 per cent. solution. This drug more or less successfully inhibits the convulsions. If active symptoms recur in two or three days, he gives another dose of 8 c.c. of the 10 per cent. solution. Certainly the intraspinal injections of magnesium sulphate should be given only in very severe cases. The dosage suggested by Eunike is not large; very much stronger solutions have been injected. The danger lies in causing paralysis of the respiration. Usener[14] states that subcutaneous injections of magnesium sulphate solutions are of value in relieving spasms and convulsions. Cloetta[15] says that the action of magnesium sulphate is similar to the action of curare, perhaps not quite so dangerous, as its action may be inhibited by calcium. Schütz has shown that magnesium sulphate diminishes heat production, and he thinks that the intensity of its action may be determined by the temperature curve.[16]

Injections of magnesium sulphate into the system, and especially into the spinal canal, are always more or less dangerous, and it would seem that in serious convulsive conditions, while waiting for the antitoxin to have its effect, inhalations of chloroform would be safer in quieting and controlling the patient than injections of a substance whose activity passes beyond the control of the physician.

Angerer[17] revives the chloral treatment of tetanus in conjunction with the antitetanic serum. He gives as high as 5 grams of chloral by rectum twice a day, and adds to this one-sixth grain of morphin hypodermically. By this means he gets a sort of "twilight sleep." He continues the antitetanic serum treatment, both intraspinally and subcutaneously, until the active symptoms of tetanus cease.

While the dose of the chloral given by Angerer is very large, some such combination of morphin and chloral, with the dose gradually increased or diminished, depending on the symptoms, seems much safer than the magnesium sulphate treatment.

Jacobsthal and Tamm[18] bathe all lacerated wounds with the ultraviolet rays, as they claim they will kill the tetanus bacilli as well as other bacteria. Riehl[19] believes that he prevents tetanus infection of wounds by applying chlorinated lime in the form of a mixture of 1 part of the chlorinated lime to 9 parts of kaolin. This powder is blown into and over all wounds. This treatment, he reports, does not cause pain, allows the wounds to heal, and seems to prevent tetanus infection.

Phenol treatment has been advised many times, and has been termed "Baccelli's treatment." Reynolds[20] reports the successful treatment of tetanus in a boy of 11 by phenol injections.

9. Comby: Brit. Jour. Child. Dis., 1915, xii, 1.
10. Simon: München. med. Wchnschr., Nov. 10, 1914.
11. Teutschlaender, O.: Deutsch. med. Wchnschr., May 13, 1915.
12. Robertson, H. E.: A New Method for the Prophylactic Application of Tetanus Antitoxin, THE JOURNAL A. M. A., Aug. 28, 1915, p. 793.
13. Eunike: München. med. Wchnschr., Nov. 10, 1914.
14. Usener: München. med. Wchnschr., 1914, lxi, 2323.
15. Cloetta: Cor.-Bl. f. schweiz. Aerzte, Jan. 16, 1915.
16. Schütz: München. med. Wchnschr., Jan. 26, 1915.
17. Angerer: München. med. Wchnschr., Nov. 10, 1914.
18. Jacobsthal and Tamm: München. med. Wchnschr., 1914, lxi, 2324.
19. Riehl: Med. Klin., Jan. 10, 1915.
20. Reynolds: Lancet, London, May 23, 1914.

Scallops as Food.—The scallop industry in Massachusetts has recently increased greatly. In 1906 the Massachusetts Fish and Game Commission at the instance of the General Court made an investigation and a report on the scallop industry, calling attention particularly to the sophistication of this food by soaking the scallops in water. Inasmuch as the courts have decided that the practice of adding water to oysters is a violation of the law, the Massachusetts authorities brought the matter of the possible violation of the law in regard to scallops to the attention of the federal authorities. A joint investigation was then made, when it was disclosed that in some instances water in amount equal to the amount of scallops was added to the vessels in which the scallops were marketed. Standards of purity were then advised by these authorities.

Water in scallops may be detected by the fact that soaked scallops usually contain a milky fluid, while unsoaked ones have almost no liquid. If a scallop is rubbed on the prism of an Abbe refractometer, and the refraction of the juice taken, unsoaked scallops will give a reading at 25 C. of 1.38 plus on the scale, while soaked ones give a reading of from 1.34 to 1.36. Experiments show that soaking lowers the percentage of proteins and solids. The normal figures are from 19 to 24 per cent. for solids and from 14 to 16 per cent. for proteins. Soaking lowers these figures to from 10 to 16 per cent. for solids and 9 to 11 per cent. for proteins. Scallops collected in the markets in Boston showed that about half of them had been soaked.—Pub. Health Bull., Massachusetts.

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THE OUTLOOK FOR BLOOD TRANSFUSION

Blood transfusion is likely to be a far more efficacious therapeutic procedure in the near future than it has been during the few years that have witnessed the introduction of a successful technic for the operation. This statement is not intended to imply that successful transfusions have heretofore been rare or that the coming period is necessarily likely to witness an increasing number of applications of the method in practice. But the technic has been rendered more satisfactory, easier of general application under difficult circumstances, and safer in its employment. This aspect of the matter is exemplified in the introduction of syringe transfusion, a process easily repeated and involving little pain or trauma as compared with the original surgical method. The necessary precautions have been studied and explained so that the dangers and complications of transfusion — such as those due to incompatible blood, dilatation of the heart and introduction of air — are readily preventable. The fundamental importance of ascertaining the possibility of hemolysis or agglutination of the red blood cells of either donor or patient by the serum of the other is almost universally recognized and taken into account. Further than all this is the fact that the indications for transfusion are being better understood so that, to quote recent writers, there is a tendency more and more to use it not as a means of last resort but as an ordinary therapeutic measure.

In the case of any novel method of treatment, applicable to clinical medicine, the value of which depends in good part on statistical results and careful observation, a retrospect and a critical review are always of practical interest. From a general summary of this sort prepared by Ottenberg and Libman[1] of the Mount Sinai Hospital, New York, we gain a decidedly helpful impression of the status of blood transfusion. Their statistics cover nearly 200 cases, and thus derive considerable authority from the force of numbers. The cases in which transfusion was apparently life-saving fall under the headings of acute anemia from hemorrhage; hemorrhagic diathesis, whether hereditary or acquired; grave chronic anemias, and poisoning. In a goodly number of other cases, transfusion was not an emergency measure, but was performed on patients whose general condition had been seriously impaired by chronic disease. In more than forty of these, great improvement followed the transfusion, even when the recovery from the disease itself was not complete. Expressed in a statistical way, 45 per cent. of the transfusion cases were successful in that the condition of the patient was greatly improved. This includes 22 per cent. in which the procedure was life-saving. In about half of the attempted transfusions, no good was accomplished.

These are the bare figures. Some details deserve to be quoted for the light which they throw on the value of the method. In almost all of the cases of gastric or duodenal ulcer, the hemorrhages stopped after transfusion. The danger of increasing the bleeding by raising the blood pressure through transfusion during active hemorrhage must not be overlooked. The cases in which it appears actually to be checked are those of repeated or prolonged hemorrhage. Blood which can form normal thrombi is supplied. Transfusion is also worth trying as a temporizing measure in other forms of prolonged hemorrhage in which there is nutritional disturbance, as in severe dysentery. Ottenberg and Libman insist that transfusion should be tried more often than it has been in the emergencies of severe typhoid. Here, too, it not only replaces lost blood but also may help to check hemorrhage. With the first appearance of blood in the stools of this disease, preparation should be made so that a transfusion can be done, if needed, at very short notice; for in the typhoid state and in very protracted cases, it may be life-saving. Transfusion seems well indicated in the conditions arising from ectopic gestation.

The occasional usefulness of transfusion in connection with surgical operations, particularly for postoperative hemorrhage, was early considered and is quite generally understood. In surgical shock the results are frankly disappointing, so that, despite the hopes once awakened, transfusion cannot be relied on as a remedy. In hemorrhagic disease, and particularly hemophilia, the results have been noteworthy. Here transfusion may actually be termed a specific therapy for the control of hemorrhage. Where serum treatment — subcutaneous, intravenous or local use of human, horse or rabbit serum — has been without remedial effect, transfusion has repeatedly supplied a lacking element and stopped hemorrhage. Ottenberg and Libman are so impressed with its value in hemophilia, in which the majority of the sufferers never reach adult life, that they look on transfusion as offering a new hope to those afflicted with this disease of high mortality. They suggest that every individual known to have hemophilia ought to have at his com-

1. Ottenberg, R., and Libman, E.: Blood Transfusion: Indications, Results, General Management, Am. Jour. Med. Sc., 1915, cl, 36.

mand several persons whose blood by previous tests is known to be compatible with that of the patient and who are willing, when called on, to act as donors. The syringe method does not injure the veins, and allows for any number of prompt transfusions. In consideration of this, the New York investigators believe that the majority of hemophiliacs might be enabled to lead a life of normal duration.

With regard to pernicious anemia, no one can be expected in the present state of knowledge to speak with emphatic certainty of any satisfactory management of this insidious disease. Ottenberg and Libman believe that transfusions should be resorted to early, and persistently repeated, to prevent the development of a marked grade of anemia. They regard transfusion as the best remedy: it never cures, but it leads to remissions in about half of the cases. When these fail, splenectomy can still be resorted to in accord with the dictates of increasing experiences. In the infectious diseases there are numerous possible fields of application for transfusion which deserve very careful study and are likely to reward it. Even in such a serious condition as endocardial infection, transfusion offers some promise. It puts the organs into better condition to respond to other methods of therapy, and inasmuch as there is a tendency in endocarditis for the patients to become spontaneously bacteria-free, the procedure may be worth trying repeatedly.

RESPONSES OF THE RESPIRATORY CENTER

It has long been known that carbon dioxid "stimulates" the respiratory center, that is, causes an increase in the rate or depth, or both, of the respiratory movements. The result is an increase in the amount of air breathed in a given time. Researches of recent years have shown that this action of carbon dioxid is in reality due to the hydrogen ions of the carbonic acid (H_2CO_3) formed when carbon dioxid is dissolved in water or in a fluid like the blood. Other acids reaching the blood have the same effect.

Loewy showed, twenty-five years ago, that within certain limits there is a parallelism between the percentage of carbon dioxid in the inspired air and the volume of air breathed. Thus the total amount of air breathed doubled when the subject inhaled air containing sufficient carbon dioxid to raise the concentration of carbon dioxid in the expired air to between 5 and 6 per cent. Loewy and others have taken advantage of this reaction to test the effects of drugs on the excitability of the respiratory center. As an illustration of the results obtained, the effect of morphin may be cited. After a small dose of morphin, a much greater concentration of carbon dioxid in the inspired air is required to cause a given increase in the amount of air breathed; in other words, the excitability of the respiratory center has been lowered by the drug. Since the excitability of the respiratory center to other stimuli (through sensory nerves, for example) is similarly lowered by morphin, the mode of action of opiates as respiratory sedatives is obvious.

Means, Newburgh and Porter[1] have recently applied the same method to a study of the condition of the respiratory center in experimental pneumonia. They compared the effects of different concentrations of carbon dioxid on the volume of air breathed by normal cats and by cats in which pneumonia had been experimentally produced. In all cases the breathing of carbon dioxid had a much greater stimulating action on the respiratory center of the normal cats than on that of the cats with pneumonia: there was a marked depression of the excitability of the respiratory center in pneumonia, especially marked in those animals which were near death, but also very pronounced in those which were only moderately ill. Aside from their great scientific interest, these results would seem to have important practical bearings. Thus, as was stated above, morphin has the same effect on the respiratory center as does pneumonia; this suggests that great caution should be used in the administration of opiates to patients ill with pneumonia.

Peabody[2] has recently applied this principle (the effect of carbon dioxid on the respiratory center) in an effort to obtain further light on the mechanism of the production of dyspnea in certain cases of cardiac and of cardiorenal disease. He found that, whereas in normal individuals the total ventilation was doubled only when the concentration of the carbon dioxid had risen to between 4.2 and 5.4 per cent., in certain of the pathologic cases the ventilation was doubled when the inspired air contained only 2 or 3 per cent. of carbon dioxid. This result does not, however, show that the excitability of the respiratory center has been directly affected in these pathologic conditions, for these results were obtained only in those cases in which a condition of acidosis was present; cases without acidosis or cases in which the acidosis had been combated by the administration of alkali reacted to an increase in the carbon dioxid content of the inspired air in a normal manner. This is another illustration of the fact that in certain cases of cardiac, and especially of cardiorenal disease, the dyspnea is due in part to an accompanying condition of acidosis.

Observations of this character are of great importance in explaining the condition and responses, under normal and pathologic conditions, of one of the most vital but in many respects least understood of the functions of the body, that of respiration.

1. Means, J. H.; Newburgh, L. H., and Porter, W. T.: State of the Respiratory Mechanism in Pneumonia, Boston Med. and Surg. Jour., 1915, clxxiii, 742.
2. Peabody, F. W.: Clinical Studies on the Respiration, I, The Effect of Carbon Dioxid in the Inspired Air on Patients with Cardiac Disease, Arch. Int. Med., November, 1915, p. 846.

THE ABSORPTION OF CHOLESTEROL

The peculiar lipoidal compound cholesterol, or cholesterin, as it is still sometimes called, has long been known to physiologic chemists; yet, aside from those features of its chemical structure which mark it as an alcohol, and certain other incidental characteristics, the real make-up of this complex substance is almost as much of a puzzle as it was two or three decades ago. Cholesterol has not been synthetized by the chemist; but its widespread occurrence in nature among animals and, in closely related form at least, among plants certainly foretells the biologic importance of the substance.

In the animal organism, cholesterol occurs not only free, but also combined with fatty acids in the form of esters. Cholesteryl oleate and palmitate are known as constituents of the blood along with the alcohol itself. In the nervous system a large content of free cholesterol is always present. Pathologic structures may also contain it. Until quite recently it has been debated whether cholesterol can be formed anew in the adult organism or whether the latter is dependent on exogenous sources for its supply. Today there is, we believe, a fair agreement that the cholesterol of the body has its origin in the food and not in actual synthesis within the tissues. English investigators, in particular, have shown definitely that feeding cholesterol either as such or in the form of its esters results in an increase in the blood content of both forms.

The extension of the physiology of cholesterol has long demanded a better elucidation of the mode and path of absorption of the substance, and some indication of the formation of its esters. Dr. J. H. Mueller,[1] of the Department of Pathology at Columbia University, College of Physicians and Surgeons, has followed the actual absorption of cholesterol and its derivatives from the alimentary tract into the lymph stream of the thoracic duct. Reasoning that, since fatty material enters the blood stream by way of the lymphatics, one might expect to find cholesterol also absorbed in this way, because of its solubility in fats and its insolubility in aqueous mediums, Mueller analyzed the lymph of experimental animals before and after feeding the lipoidal product. The figures show that cholesterol is readily absorbed from the intestinal tract through the chyle, and may be recognized in the contents of the thoracic duct. When cholesterol is fed entirely in the free condition, a portion is esterified during the absorption, and appears so in the chyle. Cholesterol esters, in turn, may be split into their component groups. Hence, either in the intestinal contents or in the wall of the intestine, processes of esterification or hydrolytic cleavage may take place. As a result, the absorbed product shows approximately the same proportion of free cholesterol to ester as is found normally in the chyle. Evidently this ratio tends to be preserved. The findings of Mueller do not prove directly that no cholesterol is absorbed immediately into the blood; but the quantitative data make such a process appear as a more unlikely probability.

1. Mueller, J. H.: The Dissimilation of Cholesterol and Its Esters, Jour. Biol. Chem., 1915, xxii, 1.

THEORIES OF DELIRIUM TREMENS

Since the Harrison Narcotic Law went into effect, many drug habitués, having exhausted their supply and failing to obtain more, have turned to alcohol as a substitute. In some who had been drinking for years, the sudden and marked increase in the amount of liquor consumed has led to the frequent occurrence of delirium tremens. This brings up anew the question as to what is the final factor in the production of delirium tremens.

Chronic alcoholic poisoning produces well-known changes in the central and peripheral nervous system. Among these are vacuolization and high grade degeneration of the nerve cells with atrophy and shriveling; fatty infiltration of the medullary substance; dissolution of the chromatin structure; inflammatory infiltration of the pia; internal hydrocephalus, and degeneration of the peripheral nerves. Cases of delirium tremens may present the same changes, or the chronic changes may be of higher grade. Even instances of Korsakoff's psychosis may differ from chronic alcoholism only in a more severe change in the ganglion cells. As yet, however, no changes have been found in the brain which explain why a man who has been drinking for years suddenly develops a delirium which runs a definite course of from three to five days or even longer.

It has been thought that delirium tremens is an acute infection occurring in chronic alcoholics. Nevertheless, many cases run their entire course without fever, and Nonne[1] found blood cultures negative in fifteen consecutive cases examined by him. Döllken[2] believes that continued drinking of alcohol results in the production of a poisonous substance in the brain itself, and that an accumulation or concentration of this substance produces delirium tremens. Jacobson[3] explains the delirium as an autointoxication, the toxin arising from the pneumococcus gaining entrance through the liver, the kidney or the intestinal tract, and acting on a brain which has been poisoned over a long period of time by alcohol. The view of Hertz[4] differs from this in that the supposed poison which precipitates the delirium comes from an insufficiency on the part of the kidney, this in turn being due to the acute nephritis which usually accompanies delirium

1. Nonne: Bakteriologische Blutuntersuchung bei Delirium Tremens, Allg. Ztschr. f. Psychiat., 1904, lxi, 220.
2. Döllken: Die körperlichen Erscheinungen des Delirium Tremens, Leipzig, 1901.
3. Jacobson: Ueber die Pathogenese des Delirium Tremens, Allg. Ztschr. f. Psychiat., 1854, xi, 221.
4. Hertz: Pathogenese von Delirium Tremens, Neurol. Centralbl., 1901, xx, 524.

tremens. That albuminuria is present and seemingly dependent on this delirium was long ago maintained by Fürstner,[5] and has been noted repeatedly since. According to Bonhoeffer,[6] chronic alteration in the intestinal tract is responsible for the elaboration of poison which is normally excreted through the lungs. In diseases of the lungs, and especially in pneumonia, an altered gas exchange occurs, the excretion of this poison is hindered and delirium tremens is the result. Wagner von Jauregg[7] believes that the liver rather than the lungs is the organ which fails to eliminate the poison elaborated in the gastro-intestinal tract, and he thinks that this failure is due to the changes occurring in the liver in chronic alcoholism. Kauffmann[8] has asserted that this poison is a carbon derivative acting on a medulla altered as a result of chronic alcoholism. He believes that the delirium will persist until the production of this carbon derivative stops.

All of these theories demand as a preliminary condition a poisoned and permanently altered central nervous system on which a poison acts. The objection is raised that many chronic drinkers develop marked brain and visceral changes and yet never suffer a delirium. In answer it has been suggested that, in patients who acquire delirium tremens, the brain has undergone some special change. As a result of this change, an autointoxication produces a delirium; or one may assume the view of Raimann,[9] that for each poison elaborated in chronic drinkers, a special psychosis results. Thus one poison causes delirium tremens, a second Korsakoff's psychosis, and a third the poliomyelitis superior acuta of Wernicke.

The possibility that delirium is due to an increase in the pressure and amount of the spinal fluid has recently been considered.[10] There are two other theories of special interest, the first on account of its ingenuity, the second on account of its bearing on statistical evidence. Jauregg[11] of Vienna assumes that the body of chronic alcoholics protects itself by the production of an antialcohol which is of the nature of an antitoxin. When a hard drinker suddenly stops taking alcohol, this antialcoholic substance, having no alcohol to which to affix itself, acts on the body in such a manner as to produce delirium tremens. Hare[12] maintains that the development of delirium is due to a sudden fall in the amount of alcohol circulating in the blood of alcoholics. His evidence is drawn from a study of seventy-five cases of delirium tremens, in nearly all of which there was a great reduction in the amount of alcohol absorbed prior to the onset of delirium. In many of these instances the alcohol was withheld; in others vomiting prevented its absorption.

Numerous objections have been raised to each of these theories. The views concerning poisons and autointoxications have been vigorously attacked because there is as yet no definite proof that a poison is elaborated. There are already adversaries to the recent notions concerning an increased pressure of the spinal fluid and the fall of alcohol in the circulating blood, all of which indicates that much work remains to be done before the final answer to the problem is reached.

5. Fürstner: Ueber Albuminurie bei Alcoholisten, Arch. f. Psychiat., 1815-1816, vi, 755.

6. Bonhoeffer: Klinische und anatomische Beiträge zur Kenntnis der Alkoholdelirien, Monatschr. f. Psychiat. u. Neurol., 1895, i, 229; Pathologische und anatomische Untersuchungen an Alkoholdeliranten, ibid., 1899, v, 379.

7. Von Jauregg: Die Giftwirkung des Alcohols bei einigen nervösen und psychischen Erkrankungen, Wien. klin. Wchnschr., 1901, xiv, 359.

8. Kauffmann: Stoffwechseluntersuchungen bei Alkoholdeliranten, Jahrb. f. Psychol. u. Neurol., 1908, x, 22.

9. Raimann: Beitrage zur Lehre von den Alkohol Augenmuskellähmungen, Jahrb. f. Psychiat. u. Neurol., 1890, xx, 136.

10. Lumbar Puncture in Delirium Tremens, editorial, THE JOURNAL A. M. A., Oct. 30, 1915, p. 1557.

11. Jauregg, quoted by Wassermeyer: Arch. f. Psychiat., 1908, xliv, 861.

12. Hare: Alcoholism, Its Clinical Aspects and Treatment, London, J. and A. Churchill, 1912.

A NATIONAL BOARD OF MEDICAL EXAMINERS

Preliminary steps have been taken for the organization of a national board of medical examiners, to be established with the government medical services as a nucleus. A body composed of fifteen physicians,[1] including representatives of the government services, is now at work on the details by which a working organization can be established. The original intention was to have representatives on the board from a number of prominent medical organizations, including the American Medical Association; but at a meeting held recently in Washington it was decided that no organizations of physicians as such should be directly represented on the board. We believe that this decision is a wise one, even though it eliminates the American Medical Association from direct representation on the board. The matter came before the House of Delegates of the American Medical Association last June, as it was a part of the president's address; the only action taken was to refer the matter to the Council on Medical Education for further consideration. It is proposed to make this matter a subject of general discussion at the conference of the Council to be held in Chicago, February 7, next. A symposium on the subject is being arranged, and several prominent speakers, including representatives of the government services and state licensing boards, will participate.

That there is need of a national board of medical examiners practically all are agreed. Such a board must be essentially a voluntary organization — unless created in some way by the national government — the

1. The present members of the national board are: Admiral William C. Braisted, Washington, surgeon general United States Navy, president; Major General William C. Gorgas, Washington, surgeon general, United States Army; General Rupert Blue, Washington, surgeon general, United States Public Health Service; Colonel Louis A. La Garde, Washington, United States Army, treasurer; W. C. Rucker, Washington, assistant surgeon general, United States Public Health Service; Commander E. R. Stitt, Washington, United States Navy; Dr. Herbert Harlan, Baltimore, representing the Federation of State Medical Boards; Dr. Isadore Dyer, New Orleans; Dr. E. Wyllys Andrews, Chicago; Dr. Louis E. Wilson, Rochester, Minn.; Dr. Victor C. Vaughan, Ann Arbor, Mich.; Dr. Henry Sewall, Denver; Dr. W. L. Rodman, Philadelphia; Dr. Austin Flint, Jr., New York, and Dr. Horace D. Arnold, Boston.

purpose of which must be not to displace but to cooperate with the various state medical licensing boards. It is essential that the educational qualifications required of those who are to take the examination should be as high as the highest required by any state board. The methods of verifying and evaluating credentials of educational qualifications must be so thorough as to make it impossible for any poorly qualified individual to slip through. Its examination must be of such unquestioned thoroughness as to make it worthy of recognition by all state licensing boards. If these conditions obtain, and especially if the certificate of this board is accepted for admission to the three government services in lieu of the examinations at present required, all state licensing boards would undoubtedly in time recognize it as an acceptable qualification for the license in their various commonwealths. Progress in this respect would be a parallel to what has taken place in Canada, where, following the organization of the Medical Council of Canada, it was necessary to secure recognition of it in each province of the Dominion.

Such a board would make for greater uniformity and higher standards not only in educational qualifications but also in the character of the examination for the license to practice medicine in every state.

Current Comment

A THEORY OF THE PRODUCTION OF DIURESIS

Some time ago Cow, of the pharmacological laboratory at Cambridge, England, made the interesting and unexpected observation that a strictly physiologic quantity of saline solution or of water, which may fail to produce any increase in diuresis when it is injected directly into the circulation, may nevertheless give rise to a distinct increase when administered by the mouth. Usually, intravenous injections of active products are more potent than oral administration. Hence the suggestion that there exists in the gastro-intestinal mucous membrane a substance which presumably is taken up by water during absorption from the alimentary tract, and that this substance, either directly or indirectly, is largely concerned in the production of diuresis.[1] More recent investigations by the same author[2] have elucidated the probable sequence of events concerned in this phenomenon. They show that perfusion of the kidney with extracts of the duodenal mucous membrane gives rise to diuresis provided the fluid has previously been passed through the general circulation or through the circulation of the head and neck. Circulation through a headless subject is ineffective. We need not here detail the evidence which furnished the explanation. It points to the pituitary body, an organ which gives an extract of known diuretic action, as the connecting link between the introduction of the duodenal mucous membrane extract and the subsequent diuresis. Ingestion of water or saline solution may thus be assumed to lead to an absorption of some substance contained in the gastro-intestinal mucous membrane which in turn stimulates the pituitary to discharge the product that induces diuresis. The suggested succession of events reminds one of the sequence by which gastric chyme is believed to liberate in the intestinal wall the secretin which thereupon provokes the flow of pancreatic juice. In the case of diuresis cited there is a duplication of hormone effects. Several phenomena are in accord with the hypothesis of Cow. The long latent period which occurs between an intravenous injection of duodenal membrane extracts and the onset of increased diuresis is explicable on the basis of the time required for the succession of indirect events including the pituitary functioning. It also indicates why in otherwise intact experimental animals whose pituitary bodies have been destroyed, intravenous injections of duodenal mucous membrane extracts produce no characteristic diuretic effects such as follow when the pituitary is intact. The suggested interrelation between the mucosa of the intestine and the pituitary is an unexpected discovery which, if it shall be confirmed, adds another to the instances of remarkable "long-distance" chemical regulative mechanisms in the organism.

1. Cow, D.: Arch. f. exper. Path. u. Pharmakol., 1912, lxix, 397; Jour. Physiol., 1914, xlviii, 1.
2. Cow, D.: Diuresis—The Pituitary Factor, Jour. Physiol., 1915, xlix, 441.

THE SOCIAL TREATMENT OF TUBERCULOSIS

The significant feature of the Home Hospital experiment of the New York Association for Improving the Condition of the Poor[1] is its recognition of the fact that tuberculosis is a social as well as an individual disorder, affecting people's lives at many points, and therefore to be attacked coincidently from several sides. The New York City Department of Health, among others, is doing work based on a recognition of this fact. Mrs. Herman M. Biggs, wife of the commissioner of health of New York State, in an address delivered before the New York Association of Tuberculosis Clinics,[2] describes the social activities of the Chelsea Clinic, located in the west side tenement district of New York. A class in dietetics gives instructions to mothers and other homemakers on the values of foodstuffs and the preparation of simple, nourishing, inexpensive foods. Trained dietitians are sent into the homes of tuberculous families under observation, to teach the members of the family how to market and cook. Families are encouraged and, so far as possible, assisted to improve their housing conditions; but this, though most important, is expensive and difficult. Physical training classes for the children have been in operation for about two years, and the results of corrective and developmental exercises have been most encouraging. A nursery, a kindergarten and a roofgarden, where the children spend most of their time, furnish means of removing them from tuberculous homes during the day. The children take

1. A Method of Attack on Poverty and Tuberculosis, Current Comment, The Journal A. M. A., Nov. 27, 1915, p. 1922.
2. Reported in the Modern Hospital, September, 1915, p. 203.

long naps, and are given a nourishing supper before their return home. Mrs. Biggs does not give figures on comparative cost and efficiency, such as were furnished by the Association for Improving the Condition of the Poor with regard to the Home Hospital. A comparison would doubtless be difficult to make, but it would be instructive to have some of the concrete results of this interesting work presented for the guidance of tuberculosis workers elsewhere.

ANOTHER TRAGEDY OF UNPREPAREDNESS

In a football game at St. Louis several weeks ago, one of the players received an injury to the cervical spine and was taken to the City Hospital. After careful examination it was determined that surgical interference was not indicated, in that fragments of the vertebra were not then pressing on the cord; that the character of the injury made the patient's condition practically hopeless, and that the treatment indicated was absolute quiet and immobilization. The parents of the boy were frankly told the seriousness of the injury. In the face of these conditions, according to the *Journal of the Missouri State Medical Association*,[1] an osteopath, who had been engaged by the father, wanted to treat the patient immediately. The surgeon in charge, fearing injudicious handling which would deprive the patient of any existing chance for recovery, refused to permit the osteopath's treatment. The osteopath, accompanied by the boy's father, then obtained an order from the mayor to the hospital commissioner, relieving the hospital physicians from further responsibility and permitting the osteopath to "try to save the patient as the doctors had 'given him up.'" Says the Missouri journal:

> For five days the patient had been resting quietly with a gradual lessening of the effects of the frightful shock from the hemorrhage into the cord. Then the osteopath applied a jury-mast to the victim's head, which resulted in renewed shock, a scream and a plea from the patient to remove the apparatus. The patient became cyanotic. The extension was removed on account of the patient's bad condition. Death followed about two hours later.

The necropsy report showed that death was due to "hemorrhage into the cord and fracture of the cervical vertebrae," thus supporting the diagnosis of the physicians and proving that their treatment had been correct. The *Journal* continues:

> Now it seems clear that the mayor and the director of public welfare actually took charge of a poor unfortunate who was receiving the best possible care which could be provided in a metropolis and noted medical center. They dismissed the skilled attendants who were honest and had informed the relatives of the actual state of affairs and turned the patient over to the distracted and deluded father and mother and an arrogant, boastful osteopath.

Here, it seems, is another instance in which the delicate watch was given over for repairs, not to a skilled watchmaker, but to a blacksmith. The change of the patient from a condition of quiet restfulness, with its possible chance for recovery, to one of sudden pain, shock and speedy death was too prompt to be interpreted otherwise than as due to the use of methods entirely unwarranted by the conditions. The safety of the patient demands that whoever assumes the rôle of the physician must have had sufficient medical training to know when such treatment is best and when it is bound to do more harm than good.

1. December, 1915, p. 544.

SECRETORY NERVES FOR THE KIDNEY

The anatomic features of the innervation of the kidney are well understood, and the relation of the nervous system to its blood supply has been fairly well elucidated in recent years. Vasomotor impulses which change the circulation in the renal organs promptly affect the condition of diuresis in them. From the richness of their nerve supply as well as by analogy with other active glands, one might expect the kidneys to contain true secretory nerves. The answer to this question has been difficult to secure, particularly because of the sensitiveness of the kidney structures to even minor variations in the blood supply and arterial pressure, as well as to the presence of small quantities of chemical substances in the blood stream. Only when these variables are controlled and accounted for can alterations in urine production be charged to nervous stimulation. The remarkable adaptability of the kidney function to changes in the composition of the fluid perfusing it is undoubtedly in large measure a response to chemical factors. Nevertheless there have been occasional suggestions of an influence exerted by the nervous system directly on the active cells. Some time ago, experiments by Asher and Pearce[1] were cited which these investigators interpreted as demonstrating the presence of renal secretory fibers in the vagus nerve. The technical difficulties of the investigation were very great, and the conclusions have not remained unchallenged. Asher and Pearce depended on the rate of urine formation for evidence of the changes in the functional activities of the renal cells under vagus stimulation. Pearce and Carter,[2] of the physiologic laboratory at the Western Reserve University in Cleveland, have sought for corroboratory evidence of renal activity under vagus stimulation in another manner. Cellular metabolism is well known to be attended with increased consumption of oxygen. The action of some diuretics, for example, is accompanied by increased gaseous metabolism of the kidney. This factor was investigated, therefore, in relation to vagus stimulation. Pearce and Carter failed to obtain evidence of any increased gaseous exchange, and their newest evidence accordingly speaks against the supposed existence of renal secretory fibers in the vagus nerve.

1. Asher, L., and Pearce, R. G.: Ztschr. f. Biol., 1913, lxiii, 83. Do the Kidneys Have Secretory Nerves? editorial, THE JOURNAL A. M. A., Dec. 6, 1913, p. 2073.

2. Pearce, R. G., and Carter, E. P.: The Influence of the Vagus Nerve on the Gaseous Metabolism of the Kidney, Am. Jour. Physiol., 1915, xxxviii, 350.

Safe Schools.—Public schools are a public trust. When the parent delivers his child to their care, he has a right to insist that the child under the supervision of the school authorities shall be safe from harm and will at least be handed back to him in as good condition as he was at first.—*Wisconsin State Board of Health Bulletin.*

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—Dr. John Little, Tuscaloosa, has been reelected treasurer, and Dr. William M. Faulk, Tuscaloosa, secretary of the board of trustees of the Alabama Insane Hospital.

State Tuberculosis Commission Appointed.—The governor has appointed the following as the Alabama Tuberculosis Commission created by the last session of the legislature: Dr. William H. Sanders, Montgomery, ex-officio, and Drs. Cabot Lull, Andrew L. Stabler and Benjamin L. Wyman, Birmingham; R. C. Long, Carbon Hill; Rev. George E. Birmingham and Messrs. J. T. Ashcraft, Florence; A. R. Brindley, Gadsden, and E. R. Brown, Birmingham.

Health Campaign in Etowah County.—State Health Officer Sanders has notified Dr. Claude L. Murphree, Gadsden, health officer of Etowah County, that he intends shortly to inaugurate a campaign for better sanitation and health in the county, and has asked for the names of ten places that will be likely to give audience to such a campaign. The county will be properly circularized and experts will urge the adoption of methods of sanitation which will bring about a revolution in health conditions.

Hospital Notes.—Work will shortly be started on the addition to the Birmingham Infirmary, West End. The addition will be in two units, 50 by 100 feet and three stories in height and in them will be housed a maternity ward and a ward for medical treatment.——A meeting was held in the court house at Clanton, November 20, to make arrangements for the erection of a hospital building at Clanton, for Chilton County.——A mass meeting of citizens of Dothan and Houston counties was held, November 8, at the State Hospital at Dothan to raise $40,000 for building and equipping a modern general hospital for the city.——The southside jail, Birmingham, has been transformed into a charity hospital under the care of the city physician.

ARKANSAS

State Society to Meet in Texarkana.—The annual meeting of the Arkansas Medical Society will be held in Texarkana early in May next.

Smallpox.—An epidemic of smallpox exists at Heber Springs. According to Dr. Charles W. Garrison, state health officer, more than fifty cases have developed in the town.

State Antituberculosis Society.—At a meeting of the State Society for the Study and Prevention of Tuberculosis in Little Rock, November 24, the local society was absorbed and new officers were elected. On the new board of directors appear the names of the following physicians: Drs. St. Cloud Cooper, Fort Smith, and Clinton P. Meriwether, Charles R. Chestnut, and Charles W. Garrison, Little Rock.

General Hospital Favored.—The closing session of the third annual conference of health officers of Arkansas, November 23, was a joint meeting between the health officers and the faculty members and alumni of the University of Arkansas, at which a resolution favoring the establishment of a state general hospital was unanimously adopted. A committee of five physicians was appointed to work out a plan for establishing a hospital and to form organizations in each county to work for the passage of a law making appropriations for its maintenance.

Personal.—Dr. Frank B. Young, superintendent of the State Hospital for Nervous Diseases, Little Rock, has resigned to take effect November 31. The board of control accepted his resignation and tendered the position to Dr. James L. Greene, Hot Springs, whom Dr. Young succeeded.——In honor of his seventieth birthday Dr. M. Donaldson, Rector, was given a banquet by local physicians and druggists, November 18.——Dr. Delparde W. Roberts, senior physician of the State Hospital for Nervous Diseases, Little Rock, has resigned to accept a similar position at the Sacred Heart Hospital near Milwaukee.

ILLINOIS

Water Survey Chemist Transferred.—H. P. Corson, instructor in sanitary chemistry and bacteriology for the Illinois State Water Survey, has been appointed sanitary chemist in the United States Public Health Service at Grove City, Pa.

New Dispensary Opened.—A free dispensary has been opened in connection with St. John's House, Ridgely, Springfield. The institution will be open on Saturdays from 10 to 12 o'clock, and a physician and nurse will be in regular attendance.

Epidemic Diseases.—The public schools of Sparland have been closed on account of the presence of smallpox.——The schools in DuQuoin have been dismissed and the buildings fumigated on account of the presence of twenty-five cases of diphtheria in the city.

Personal.—Dr. Warren R. Rainey, Salem, a member of the Chicago unit, has returned from Flanders.——Dr. Henry S. Metcalf, Mt. Carroll, is reported to be seriously ill with septicemia in the Freeport General Hospital.——Dr. Wilfred H. Gardner, Bloomington, who has been serving as surgeon in a British Hospital in London, for almost a year, sailed for the United States December 8.——Dr. Marion E. Reed, East St. Louis, has returned after eight years in the Samoan Islands.——Dr. Clarence M. Cheadle, Ashton, is at Nish, Serbia, recovering from typhus fever.——Dr. Emil Lofgren, Rockford, has been elected president of the Winnebago County Antituberculosis Association.——Dr. John P. Benson has been elected president and Dr. Herbert S. Worthley, secretary, of the medical staff of St. Joseph's Hospital, Joliet.——Dr. William C. Bridge, Elgin, fell on a slippery pavement, November 22, receiving a severe scalp wound.

Chicago

Physicians' Club Meets.—The Physicians' Club held its second dinner of the year, November 23, when the psychopathic situation was discussed. Chief Justice Harry Olson of the municipal court presided.

Hospital Addition Approved.—Plans for a $1,000,000 addition to the Cook County Hospital which is to contain a model hospital kitchen, have been approved by members of the Board of County Commissioners.

New Charities Building Dedicated.—The building at Wood and Selden Streets, erected at a cost of $200,000 by Julius Rosenwald, housing the West Side Charities and to be used as a general administration building by the Associated Jewish Charities, was dedicated with formal ceremonies on November 28.

Annual Address at Institute of Medicine.—At the annual meeting of the Institute of Medicine of Chicago, December 7, Drs. Thomas J. Watkins, Robert B. Preble and Frank Cary were elected members of the board of governors for a term of five years. The annual address was delivered by the president, Dr. William E. Quine, on "Medical Teachers and Teaching," and Professor Stieglitz of the University of Chicago and Professor Kendall of Northwestern University spoke on the "Relation of the Institute to Medical Progress."

Children's Health Crusade.—The December issue of the *Open Air Smile*, the organ of the Elizabeth McCormick Open Air School, is devoted to the Children's Health Crusade Day, December 10. The superintendent of schools has requested teachers in all schools to see that this journal is distributed to each child and that it be used at reading lessons and at convocation exercises and as a test for health talks on that day. A similar use will be made of this issue of the periodical in the parochial schools of the city.

Personal.—Dr. William A. Clark sailed for Belgium, December 4, to be director of an American Red Cross unit at Hospital L'Ocean, La Panne, Belgium.——Dr. Maurice B. Wallin, ambulance surgeon of the West Chicago Avenue Police Station, was injured in a collision between his automobile and a street car, November 30.——Dr. John Dill Robertson has been appointed chairman of the committee on sanitation of the Chicago Bundle Days Committee.—Dr. Irving F. Stein has been appointed associate in obstetrics on the staff of the Michael Reese Hospital.——Dr. Otto T. Freer delivered an address before the German Medical Society of New York on December 6. His subject was "Opening the Frontal Sinus Through the Nose."

IOWA

Hospital News.—Dr. George W. Franklin has opened a hospital in Jefferson. The institution has five rooms and accommodation for seven patients.——Dr. Joseph J. Meehan has purchased the Young property at Denison and will remodel the house for a private hospital or sanatorium.

New Antituberculosis Societies.—The Sioux City and Woodbury County Society for the Prevention of Tuberculosis was organized November 12 to take over the work that has been performed by the Visiting Nurses' Association.——A society for the prevention of tuberculosis was organized at Boone, November 23, at which Dr. Albert B. Deering was elected president.

Personal.—Dr. W. T. Graham, superintendent of the Methodist Hospital, Des Moines, has been placed in charge of the hospital of the state university, Iowa City.——Dr. Guilford H. Sumner, Des Moines, secretary of the State Board of Health, is reported to be ill in a hospital in Ruthven.——Dr. J. Robert Wright has been appointed assistant superintendent of the State Hospital for Inebriates, Knoxville, succeeding Dr. J. Van Meter, who has accepted a position at the Clarinda State Hospital.

Vital Statistics.—Iowa, with a population of 2,225,000, in August had 1,534 deaths. According to the report of the State Board of Health, 184 of these deaths were in children under 1 year; 55 in children from 1 to 5 years; 33 from 5 to 10 years. There were 23 deaths of persons 90 years of age or over. The number of deaths in state institutions was 30. There were no deaths in the state during the month from malaria, smallpox or rabies. There were 21 deaths from typhoid fever, 7 from measles, 8 from whooping cough, 2 from pellagra, 5 from tetanus, 169 from cancer and other malignant tumors, 167 from organic diseases of the heart, 106 from nephritis and other diseases of the kidneys, 17 from puerperal septicemia and other puerperal diseases. There were twenty-three suicides.

KENTUCKY

New Hospitals.—The Citizens' National Hospital, a continuation of the hospital of the old Louisville National Medical College, was reopened in new quarters at 1525 W. Chestnut Street, Louisville, November 9.——At a meeting of the Clark County Medical Society at Winchester November 5, it was announced that $17,500 was now available for the county hospital project. The Fiscal Court has made a pledge of $5,000 as soon as $25,000 has been raised. The society now asks that this amount be reduced so that the court's donation may become available when $20,000 has been raised. ——A meeting was held in Mt. Sterling, November 6, in the interest of a hospital for Montgomery County for which $25,000 is required. A committee was appointed to visit Harrodsburg and inspect the new hospital there.——The new Harrodsburg Hospital, erected at a cost of $13,000, was formally dedicated October 22. Dr. Lewis S. McMurtry, Louisville, delivered the principal address.

LOUISIANA

Health Exhibit Car in Texas.—The educational hygiene exhibit car of the Louisiana State Board of Health was on exhibit in Dallas during the meeting of the Southern Medical Association.

Quarantine Not to be Moved.—Surgeon-General Rupert Blue, U. S. P. H. S., after an investigation of the quarantine station, has decided that it is unnecessary to remove the station closer to New Orleans.

Personal.—Dr. Joseph D. Tuten has succeeded Dr. S. George Kreeger, resigned, as president of the Board of Health of Lake Charles.——At a meeting of the Fifth District Medical Society at Tallulah, a medal was presented to Dr. Thomas E. Wright, Monroe, for original research in the treatment of malaria by the intravenous injection of quinin. The medal was presented by Dr. Oswald W. Cosby on behalf of the society.——Dr. Clarence Pierson, superintendent of the East Louisiana Hospital for the Insane, Jackson, has resigned.——Dr. E. M. Ellis, Crowley, has been appointed a member of the State Board of Health, succeeding Dr. Henry B. White, Gueydan, who has been made state medical inspector.

MARYLAND

Hospital Dedicated.—The new Emergency Hospital, Easton, was formally dedicated November 23.

Personal.—Dr. Nathan G. Keirle has been reappointed chief medical examiner of Baltimore city by Health Commissioner John D. Blake. Dr. Keirle has held this position for many years.——Dr. Henry G. Branham was also reappointed assistant chief medical examiner.——Dr. Henry O. Reik gave the third of a series of lectures during the past week, the subject being "Our National Parks."—Dr. T. C. Janeway has been elected president of the Baltimore community workshop.

Health Department Gets Additional Appropriation.—Health Commissioner Blake has been allowed practically all he asked for in the way of appropriation, except that required for a new hospital building at Quarantine and an additional ward building and a home for nurses at Sydnum. He was, however, given an appropriation for an additional tuberculosis dispensary in North Baltimore. The total increase will aggregate about $40,000.

Society Meets at Training School.—The Baltimore County Medical Society held a meeting November 17 at the Rosewood Training School, Owings Mills. The Society was entertained at luncheon by Dr. Frank W. Keating, superintendent of the school, and later made an inspection of the building under the guidance of Dr. Keating and his assistant. Clinics were afterward held by Drs. Keating and Kenneth B. Jones, Baltimore.

Charity Campaign Opened.—A campaign to raise $225,000 for the support of the organizations composing the Alliance of Charitable and Social Agencies of Baltimore was begun during the past week. The campaign was organized at a dinner held at the Emerson Hotel when various teams were appointed to secure the money in the time limit, two weeks. A luncheon is held every day at the City Club, at which time each team reports the results of its day's work. Thus far over $77,000 has been raised.

University to Ask State Funds.—The University of Maryland will ask the legislature at its next session to grant a substantial annual appropriation. Of recent years the institution has received no money from the state except the grants to the hospital and St. John's College, which is an integral part of the university. Since the recent consolidation of the university with the College of Physicians and Surgeons, there has been greater need for funds, and although the legislature appropriated $15,000 for the school in 1915 and a like sum in 1916, the money is said not to have been paid to the institution.

MASSACHUSETTS

Cancer Clinic to be Established.—Carney Hospital, Boston, announces the establishment of a clinic for the treatment of cancer and other malignant diseases by the use of radium. The clinic will be opened late this month or early in January. It will be under the supervision of Dr. John T. Bottomley and the radium for use has been donated by M. Douglass Flattery of Boston.

School Physicians Named.—The school committee of Boston has appointed forty physicians as inspectors of schoolchildren. Each physician will receive a salary of $504, excepting one later to be selected, who will act in the employment certificate office and will receive $900 a year. These appointees will take the place of the health board physicians who formerly were assigned to duty in public schools.

Honor Old Members.—Drs. Edward Cowles, Plymouth; Samuel H. Durgin, Duxbury; A. Elliott Payne, Brockton; Horatio F. Copeland, Whitman, and Calvin Pratt, Bridgewater, all of whom have been in practice more than fifty years and all of whom, in addition, were veterans of the Civil War and are still engaged in active practice, were guests of honor at a banquet given by the Plymouth Medical Society at Brockton, November 23. Dr. Gilman Osgood, Rockland, officiated as toastmaster.

Decennial of Social Service Department.—The tenth anniversary meeting of the social service department of the Massachusetts General Hospital was held in the institution, November 30, Dr. Richard C. Cabot, presiding. The program includes papers by Mr. Homer Folks on "Humanizing the Institution"; by Mrs. William H. Lathrop on "The Responsibilities of Popularity"; and a discussion by Dr. Richards Eustis, Cambridge; Miss Clara M. Welsh, and Thekla Andren on "What Was Done for Rebecca Aronobsky by Those Who Did It," an illustration of the care of heart disease in children.

Personal.—Dr. Hugh Cabot, Boston, read a paper at the monthly meeting of the surgical section of the Hartford (Conn.) Medical Society, November 22.——Dr. Stanley S. Osburn, Peabody, who has been on duty at Uskub, Serbia, is believed to have been taken prisoner by the Bulgarians. ——Dr. George A. Powers, Worcester, has been appointed associate medical examiner in Worcester County and Dr. William O. Faxon, Stoughton, has been reappointed medical examiner for Norfolk County.——Dr. Robert Williamson Lovett, Boston, has been elected John B. and Buckminster Brown professor of orthopedic surgery in Harvard Medical School.

MINNESOTA

Anthrax.—A death from anthrax was reported in the returns to the State Board of Health for October, in the person of a farmer's wife at Rapidan, Blue Earth County, who was said to have been stung on the cheek by a bee or wasp. The diagnosis was made by two physicians of Winona. The State Board was not notified of the case until the woman's death.

Territory Served by Mankato Laboratory.—The State Board of Health has authorized the extension of the territory served by the Mankato Branch Laboratory. This will include all the counties of Lincoln, Lyon, Redwood, Blue Earth, Brown, Nicollet, Rock, Nobles, Jackson, Martin and Faribault and portions of Yellow Medicine, LeSueur and Waseca counties. The examinations made by the laboratory include sputum examinations, the Widal test and cultures for diagnosis and release from quarantine for diphtheria.

Sanatorium Opened.—The new tuberculosis sanatorium for Goodhue County, erected at a cost of $36,000 at Mineral Springs, near Cannon Falls, which will accommodate from thirty-five to forty patients, has been officially dedicated and is open to receive patients. With the opening of this institution, four similar sanatoriums are now in operation, and ten others under construction.——At the state sale of lands held at Brainerd, November 20, the State Fish Hatchery, Deerwood, was sold at its appraised valuation to the Crow Wing-Aitkin County Tuberculosis Sanatorium Commission. The tract of land purchased includes 44¼ acres, with an eight-room two-story modern house. The site is about 2 miles from Deerwood, near the Northern Pacific and Soo railways.

Personal.—Dr. William R. Bagley has resumed the practice of medicine in Duluth, after ranching in Oregon for five years.——Dr. James S. Gilfillan, St. Paul, was operated on for appendicitis in St. Luke's Hospital in that city, December 1.——Dr. Carl A. Scherer, Minneapolis, has moved to Fargo, N. D.——Dr. Ernest E. Wells, Stillwater, coroner of Washington County, has assumed duties as sheriff on the death of that officer.——Dr. Gerald R. Maloney, Belle Plaine, who has been ill, has recovered and resumed practice.——Dr. Frederick U. Davis, Faribault, fractured his arm while cranking his automobile, November 14.——Dr. Edwin S. Muir, Winona, who was operated on recently for appendicitis at the Winona General Hospital, is convalescent.——Dr. Honore D. Valin, pathologist to the St. Peter State Hospital, has resigned to accept a similar position at Fort Wayne, Ind.——Drs. Alexander H. Brown and Thomas Lowe have associated themselves together to conduct a hospital to be known as the Pipestone Hospital.——Dr. Francis H. Gambell was elected mayor of Thief River Falls at the recent election.——Dr. Holland T. Ground of the staff of St. Peter's State Hospital, who was operated on for appendicitis recently, is convalescent.

NEW JERSEY

Water Company Held for Typhoid.—The Mt. Holly Water Company has been held responsible for causing typhoid fever during the outbreak in 1912, by a jury in the Burlington County Court which awarded $500 to William S. Fryer in his suit to recover on account of the illness of his daughter. This is the second successful suit against the water company.

To Enlarge Tuberculosis Pavilion.—Release from the crowded conditions of the Tuberculosis pavilion of the Soho Isolation Hospital, Newark, was promised, November 17, when the building committee of the board of freeholders eliminated the proposed new laboratory and substituted an additional ward for tuberculosis patients. A bond issue of $60,000 has been asked for this purpose.

Personal.—Dr. Joseph W. Williams has been appointed city physician of Paterson to succeed Dr. Paul E. Rauschenbach, resigned.——Dr. James J. McGuire, Trenton, has been appointed a member of the State Board of Medical Examiners, succeeding the late Dr. Horace G. Norton.——Dr. Jacob C. Price, Branchville, has been appointed chief of the division of bureau administration; R. B. FitzRandolph, chief of the laboratory of hygiene; Dr. A. Clark Hunt, Metuchen, chief of the bureau of medical supervision, and Dr. Millard Knowlton, Trenton, chief of the bureau of education and publicity of the State Department of Health.——Dr. Britton D. Evans, Greystone Park, has been appointed chairman of the committee to prepare legislation for better care of the insane.

NEW YORK

Personal.—Dr. C. M. Louis Hacker, Albany, has resigned as instructor in surgical pathology in the medical department of Union University, Albany.

New York City

Home from Serbia.—Dr. George F. Adair, Lynbrook, L. I., has returned from Serbia, where he was in the service of the Serbian Red Cross.

New Convalescent Home.—The New York Association for Improving the Condition of the Poor has opened a convalescent home for wage-earners at Sea Breeze, Coney Island.

Food Inspector Dies.—Bayard Clarke Fuller, supervising inspector of food in the New York Department of Health from 1890 to 1911, died in the Post-Graduate Hospital, New York City, November 11, aged 52.

Memorial to Dr. Blackwell.—A tablet in memory of Dr. Emily Blackwell and her sister, Dr. Elizabeth Blackwell, has been placed in the New York Infirmary for Women and Children, which was founded by them. The bronze medallion on the tablet is the work of Victor D. Brenner of New York.

Leprosy.—Two patients with leprosy have recently been the subject of investigation by physicians of the New York City Health Department. It is said there are only ten known lepers in the city, all but three of whom are confined in institutions. These three are under surveillance by the health board.

Hospital for Wall Street Assured.—The proposed Broad Street Hospital now seems assured, as it is announced that $50,000 has been raised. This sum was fixed by other wealthy men in the Wall Street district as the necessary requirement before they would contribute, and makes the prospect of increased funds assuring.

Academy of Medicine Elects Officers.—At the stated meeting of the New York Academy of Medicine held December 2, officers were elected to fill expired vacancies. The term of the president, Dr. Walter B. James, does not expire until 1916. Dr. George David Stewart was elected vice president and Dr. Frederick T. Van Beuren, Jr., recording secretary.

Personal.—Dr. Mary M. Crawford has returned from work with the American Ambulance, Paris.——Dr. Andrew J. Gilmour lectured before the Vassar Institute, Poughkeepsie, November 30, on "Climbing the Canadian Alps."——Dr. Robert C. James has retired from active practice and will make his home near Lexington, Ky.——Dr. Sumner Everingham has returned from eight months' service in Serbia.

Medical Relief Expedition for Germany.—The second medical relief expedition for Germany and Austria-Hungary, dispatched by the American Physicians Expeditions Committee, sailed for Copenhagen on the *Hellig Olav*, November 25. The expedition is headed by Dr. Fred Kammerer, who takes with him three other surgeons and six nurses and a complete outfit for the equipment of a hospital with 300 to 400 beds.

Demand for Women Doctors Starts Campaign.—The board of trustees of the New York Medical College and Hospital for Women has set out to raise $200,000 by Sept. 1, 1916. The money will be used to erect what has been called "an emergency plant." This step is being taken in response to the demand from Europe for women physicians to take the place of men whose services have been required by their country and in this country for social work.

Columbia Courses at Long Island College.—Beginning with September, 1916, Columbia University will give, at the Long Island College Hospital, Brooklyn, a year of college work in physics, chemistry, biology, English, French and German. This work is especially planned to enable prospective medical students to meet the admission requirements of the Long Island College Hospital. The course will, however, be open and suitable for all, and those who take it will receive university credit.

State Health Officer Wants Half a Million.—State Commissioner of Health Biggs has appeared before the Government's Budget Committee to plead for an increase in the appropriation for his department. The chief needs are the creation of a division for the prevention of tuberculosis, the extension of laboratory work and the payment of full salary to sanitary supervisors. The funds provided for the present fiscal year were not sufficient by $79,000 to pay the expert chemists engaged in blood tests and in the preparation of diphtheria antitoxin and other serums.

Hospital of Rockefeller Institute.—The Rockefeller Institute for Medical Research maintains a hospital in connection with its research work to which a limited number of patients is admitted. According to a *Bulletin* just issued by this hospital, patients ill with acute lobar pneumonia, with diabetes mellitus, heart disease and nephritis are now admitted. Physicians having such patients may communicate with the hospital. No charge is made for treatment or other services. Patients most acceptable at the present time are those cases of heart disease with broken compensation, especially those with edema, and cases of nephritis with severe symptoms and edema or those with threatened uremia.

Radium Sanatorium Opened.—An institution which occupies two private houses on West Seventieth Street is now open and receiving patients, there being at the time of writing eighteen patients under treatment. Already 300 milligrams of radium have been delivered to the institution and $130,000 worth has been contracted for. The pathologic and biologic laboratories are being thoroughly equipped for the study of malignant conditions, and it is stated that all alterations in the building will be completed by January 1. There will be a dispensary for the treatment of outpatients. The staff in surgery consists of Drs. Cornelius G. Coakley, John A. Fordyce, Charles H. May, George D. Stewart, Winfield Ayres, Henry C. Coe, Anthony Bassler, Eugene C. Savidge, George M. MacKee, William C. Lusk, Frederick E. Sondern and Joseph B. Bissell. The medical staff of the institution has not yet been announced.

Tuberculosis Week.—Since December 6 to 12 has been designated as National Tuberculosis Week, an effort will be made in this city to revive interest in tuberculosis, which is still the greatest public health problem. The Department of Health will place emphasis on the importance of regular medical examinations. Wednesday, December 8, has been designated "Medical Examination Day." Hundreds of thousands of circulars are being distributed to the people of the city urging them to consult their family physicians and to submit to a thorough physical examination. This effort of the Health Department is receiving the cooperation of the Charity Organization Society, the Tuberculosis Committee of the Brooklyn Bureau of Charities, the Metropolitan Life Insurance Company and the Prudential Life Insurance Company. It is also suggested that physicians can render invaluable aid to the cause of public health by advocating regular medical examinations to their patients and by carrying out such examinations with care and thoroughness.

Examination of Food Handlers by Private Physicians.—Important changes have been made in connection with the examination of food handlers by private physicians. Private physicians will be authorized to examine food handlers employed in kitchens and dining rooms of restaurants and hotels in compliance with the regulations of the board of health. The physician desiring such authorization must make application to the department of health, and must observe the instructions of the department requiring that report blanks issued by the department of health be used, that a report card must be made out for each applicant, that all information asked for must be given, and an entry made in every blank space. Because of lack of laboratory facilities the department of health is not yet prepared to demand a Widal test in every case, but a specimen for a Widal test must be forwarded in every instance in which the applicant gives a history of having had or having been exposed to typhoid fever. A parole system has also been established for food handlers who are found to have a quiescent or arrested tuberculosis or a tertiary syphilitic condition without open lesion. These applicants are given a short term certificate good for a period of one month, and are required to present themselves at the end of that time, when on the recommendation of the examining physician, a renewal of the short term certificate for another month is given. These advisory physicians give no treatment of any kind.

PENNSYLVANIA

Personal.—Dr. Edward S. Dickey, Pittsburgh, will join Dr. Esten L. Hazlett, formerly of Pittsburgh, in Red Cross work at Tielis, Russia.

Health Exhibit Complimented.—The state commissioner of health has received a telegram complimenting the Pennsylvania Health Department exhibit at the Panama-Pacific Exposition and asked that it be made a part of the government exhibit at the Panama National Health Exhibition which opens January 1.

Communicable Diseases.—The authorities of Jessup have ordered schools, churches, nickel shows and dance halls closed and have forbidden congregations of people on account of the prevalence of smallpox.——The Walnut Street School, Hazleton, has been closed because of the existence of fourteen cases of diphtheria.——On account of the prevalence of diphtheria in Shamokin Dam, the schools have been closed for fumigation.

State Takes Charge of Borough Health Administration.—Commissioner of Health Dixon on November 23 took charge of the public health administration of the boroughs of Jacksonville, Hartleton, Grand Valley, Curwensville, Meshoppen, New Buffalo, Jefferson, Rice's Landing, Greensboro, Mt. Morris, Finleyville, Driftwood, Cormont, Hagerstown, Conneaut Lake, Venang, Troutville, New Washington, Glen Hope, Waterford, Cranesville and Lockport. This action was taken because the local boards of health were either inactive or not organized.

Philadelphia

Favors Reconstruction of Hospital.—Director Ziegler, of the Department of Health and Charities, favors the reconstruction of the Pennsylvania Hospital and endorsed the proposal of Senator James P. McNichol which provides for an eventual expenditure of $8,000,000 in this work.

Civil Service Examination.—The civil service commission has scheduled for December 17 an examination for outdoor physician with an annual salary of $540. Applicants should call in person at the office of the commission, room 875, city hall, between 9 a. m. and 4 p. m. Applications must be executed and filed with the commission not later than three days prior to the day of the examination.

Mütter Lecture.—The Mütter lecture for 1915 will be delivered in the Thompson Hall, College of Physicians, Twenty-Second Street above Chestnut on Friday, December 17, at 8:30 p. m., by Dr. Rudolph Matas, professor of surgery in Tulane University, New Orleans, on "The Fundamental Principles that Underlie the Surgical Treatment of Aneurysm."——A reception will be given to Dr. Rudolph Matas, New Orleans, at the Hotel Rittenhouse immediately after the Mütter lecture, December 17.

Women Help City Hospitals.—On November 30, Dr. S. Lewis Ziegler, director of public health and charities, appointed a "Women's Advisory Council" to take charge of charity work at the Philadelphia General Hospital and the Philadelphia Hospital for Contagious Diseases. The work of the council will be in line with the project for the establishment of a greater hospital; the removal of the insane from Blockley to Byberry and the removal of the indigent from the Blockley Alms House to Holmesburg.

Personal.—Dr. Andrew Anders was seriously injured in a collision between the automobile in which he was riding and a trolley car, November 29.——Dr. Douglas T. Davidson of the staff of the University Hospital will sail from San Francisco early in January for China where he will become a member of the faculty of the medical department of the College of Changsha, Hunan Province, which is operated by Yale University. Dr. Davidson will be accompanied by his wife and two children.——Dr. John R. Wells of the staff of the Pennsylvania Hospital and four nurses sailed from New York on the *La Touraine*, November 27, for France, where they will serve in the American Ambulance Hospital, Neuilly.——Dr. Malcolm C. Grow, who left September 12, with Dr. Edward H. Egbert of Washington, D. C., for Russia, was recently appointed chief surgeon with the rank of lieutenant-colonel on the twenty-first flying column of the Russian Red Cross under Commander Andrew Kalpashnikoff, former secretary of the Russian Embassy at Washington.——Dr. Charles Bingham Penrose has been appointed a member of the Fairmount Park Commission to fill the unexpired term of Peter A. B. Widener.

CANADA

Personal.—The Hon. Dr. Thomas S. Sproule, Markdale, Ont., speaker of the Canadian House of Commons, has been appointed a member of the Canadian senate.——Dr. George E. Clerk, Melville, Sask., has been appointed medical officer of the Sixty-Ninth Battalion, a French-Canadian battalion for overseas service.

Medical Board at Camp Toronto.—A medical board has been appointed to sit daily in Toronto in connection with sick soldiers in that divisional area. This board consists of the following medical men: Lieut.-Col. George Acheson, Hamilton; Capt. Albert H. Rolph, Toronto; Capt. Daniel A. McClenahan, Hamilton.

Hospital News.—Fire broke out in the military hospital at Belleville, Ont., December 2. About 19,000 pounds of ammunition were stored in the building, but this and seven or eight patients were removed safely.——A new Canadian hospital has been opened at Ramsgate, England, with accommodation for 600 patients. Col. Walter L. Watt of Winnipeg is in charge.——Lieut.-Col. Harry B. Anderson and Lieut.-Col. Herbert A. Bruce, Toronto, have been appointed to organize the Convalescent Home in Toronto for returned soldiers. They will select the medical and surgical staffs at once, whose services will be gratuitous.

Free Serums for Ontario.—Following on the observations as to the results from the free use of diphtheria antitoxin in Toronto where the general death rate from diphtheria in that city is 16 against 6 in the Isolation Hospital where perhaps the worst cases are treated, the serum being supplied free to the hospital and in large doses, the Ontario government announces its intention to undertake, through the Ontario Board of Health, to supply free practically all the serums used in the province. Of diphtheria antitoxin alone it is expected that from 150,000 to 200,000 doses will be required and about 500,000 doses for antityphoid innoculation. The serums will be supplied free to physicians, hospitals, boards of health and the public generally. Ontario is the first province in Canada to adopt this system of preventing communicable diseases and to lessen the incidence and death rate from those diseases.

Ontario Medical Commission Resumes Sittings.—Mr. H. S. Osler, K.C., Toronto, presented arguments before the Ontario Medical Commission last week, supporting the case for the Ontario College of Physicians and Surgeons, of which body he is counsel. He first dealt with "patent medicines," pointing out that the public had no protection against the evils of many of these which were mostly foolish preparations. Mr. Justice Hodgins thought, however, that some of them were built on common-sense lines. Mr. Osler said in his understanding of the Ontario Medical Act any man who holds himself out as being competent to relieve suffering is practicing medicine; and in the "drugless healers" phase of his argument, said there should be some provision in the law to prevent unqualified people advertising themselves as "doctors." Mr. Osler further stated that the College of Medicine and Surgery for Ontario was at one with all those who had appeared before his lordship pressing that a recognized university degree be the minimum standard of qualification. He said doctors as a rule were not given to money making, and they were not prompted by any selfish motives in any effort they may make to have the act amended; it was solely in the public interest. His lordship has asked the College of Physicians and the universities to confer and come to some common agreement as to what should be recommended. He suggested that such a conference might take up the subject of fees charged by physicians as well as the fees charged for examinations. Advertising on the part of any doctor might also be considered; in fact, what the commissioner desired was a full and complete statement of what in their opinion should be the status of the whole matter of medical education, examination and practice. The commission sits in Hamilton the present week to hear the chiropractor society there. It is understood Mr. Justice Hodgins will investigate the college at Davenport for his own benefit.

GENERAL

Western Surgeons to Meet.—Surgeons from Baltimore to Butte are expected to be present at the meeting of the Western Surgical Association, which will hold its twenty-fifth annual meeting at the Chamberlain Hotel, Des Moines, December 17 and 18, under the presidency of Dr. J. Rilus Eastman, Indianapolis.

First Aid Standardization.—The Board on First Aid Standardization recently appointed by President Wilson, held its first meeting in Washington, November 27, and perfected its organization. Dr. Richard H. Harte, Philadelphia, was elected chairman, and Asst. Surg.-Gen. William Colby Rucker, U. S. P. H. S., secretary of the board.

Alienists Elect Officers.—At a meeting of the Interstate Psychiatric Association, held at the Sheppard and Enoch Pratt Hospital, Baltimore, November 23, the following officers were elected: president, Dr. Henry A. Cotton, Trenton, N. J.; vice president, Dr. Edward N. Brush, Baltimore; and secretary, Dr. Samuel T. Orton, Philadelphia.

Warning.—Dr. Hart Beyer, Pittsville, Wis., writes that during the latter part of July an agent called on him selling a vaporizing inhaler alleged to be manufactured in Philadelphia. After writing to the address given, however, the letter was returned marked "not in directory," and on inquiry of the commercial agencies the firm named is not known.

Opponents of Alcohol and Other Narcotics to Meet.—The American Society for the Study of Alcohol and Other Narcotics will hold its forty-fifth annual meeting at the Hotel Raleigh, Washington, December 15 and 16. The public is cordially invited to be present; programs may be obtained from the secretary, Dr. T. D. Crothers, Hartford, Conn.

Typhus in Mexico.—An Associated Press dispatch of December 4 states that typhus fever, which has been epidemic in and around the City of Mexico, has now increased to an alarming extent. The death rate from this disease now exceeds 130 a day and is increasing. It is estimated that there are at present 11,000 cases in the federal district and neighboring towns.

Stock Plague Expensive.—It is estimated that the direct loss due to the hoof and mouth disease epidemic in the United States, up to July 1, was $5,600,000. This estimate was made November 29 in a paper by A. J. Glover, Fort Atkinson, Wis., on "The Economic Effect of the Hoof and Mouth Disease," which was read before the conference of state and federal authorities in Chicago, November 29.

National Examination Board Meets.—The National Board of Medical Examiners closed its session at Raleigh Hotel, Washington, November 29, after adopting plans by which it is hoped that every state in the Union eventually will recognize its certificate from the National Board as sufficient credentials for the issue of a license to practice medicine. The Medical Corps of three government services are represented on this board, of which Surg.-Gen. William Braisted, U. S. Navy, is president, and Col. Louis A. LaGarde, M. C., U. S. Army, treasurer.

Labor Legislation.—The ninth annual convention of the American Society for Labor Legislation will be held in the Shoreham Hotel, Washington, December 28 and 29, and the program is to be devoted to vital questions of the day, the main topics being the Lafollette Law for the Protection of American Seamen, The New York Industrial Commission; A Practical Form of Health Insurance for Wage-Earners, and The Progress Made Throughout America in Industrial Hygiene, with Especial Reference to Dangerous Trades, Child Labor, Protection of Female Wage-Earners and The Factory Situation. The closing meeting of the convention is to be held jointly with the Pan-American Scientific Congress, and the especial topic will be the "Progress Made in Industrial Hygiene in the Different Republics of the Two Americas."

Dogs as Carriers of Disease.—The Department of Agriculture has issued a bulletin on dogs as carriers of disease. Among the most interesting and important of these diseases at the present time is foot and mouth disease among cattle, of which, it is said, dogs act as mechanical carriers by running over infected farms. Other maladies which may be spread by dogs are rabies, hydatid, ringworm, favus, tapeworm, round-worm, and tongue worm. These may be conveyed to human beings. Dogs may also be the carriers of fleas and ticks and by this means aid in spreading bubonic plague and spotted fever. Dogs may become infected with various parasites by feeding on carrion and should be prevented from obtaining access to such material. In outbreaks of ringworm or favus among children, the dog should be suspected as a possible source of the trouble.

Stereopticon Loan Library.—The U. S. Public Health Service announces that the service has established a stereopticon loan library, consisting of over 2,000 slides, the majority of which are original, dealing with public health problems. These slides will be loaned without cost to physicians, health organizations, educators, welfare workers and others on application to the service. They cover such subjects as Alaska, 83 views; children and children's diseases, 50 views; health exhibits, 90 slides; hookwork, 90 slides; Indians, 50 views; leprosy, 45 slides; living conditions, a small number; malaria, 275 views; milk, 80 views; mouth hygiene, 12 slides; parasites and organisms, over 200 views; pellagra, over 500 views; rural schools, 10 slides; service general, 320 slides; smallpox, 90 slides; trachoma, 120 slides; tropical diseases, 40 views; tuberculosis, 100 slides; typhoid fever, 350 views; yellow fever, many slides, as well as slides of other miscellaneous subjects. These slides are 3½ by 4 inches and will fit most any lantern. Catalogs of these views will be sent on request, out of which selections may be made, or the service will make the selections on any subject desired to be presented.

Mental Hygiene Surveys.—The National Committee for Mental Hygiene has completed surveys with reference to

public and private provision for feebleminded, epileptics, insane and allied defectives, for Pennsylvania, South Carolina and Wisconsin. Surveys are under way for Arkansas, Missouri, Texas and Florida. State surveys will be undertaken for Maine, Rhode Island, Connecticut, New Jersey, North Carolina, Georgia, Tennessee, Indiana, Illinois, Kansas, Oklahoma, Washington, Oregon and California. A map issued by the committee shows that separate provision for the feebleminded and the epileptic has been made in the following states: Massachusetts, Connecticut, New York, Pennsylvania, Virginia, Ohio, Michigan, Indiana, Illinois, Iowa, Kansas and Texas. In Wisconsin, Minnesota, South Dakota, Missouri, Oklahoma, Colorado, Wyoming, Washington, Oregon and California the feebleminded and epileptics are segregated from the insane, but are housed in the same institution. Epileptics are not cared for by the state in states not mentioned. The following have no separate institutions for either feebleminded or epileptics: Nevada, Utah, Arizona, New Mexico, Arkansas, Louisiana, Mississippi, Tennessee, Alabama, Georgia, Florida, South Carolina and West Virginia.

Examination for Medical Corps of the Navy.—An examination for appointment in the Medical Corps of the Navy will be held on or about February 23 at Washington, D. C., Boston, New York, Philadelphia, Norfolk, Va., Charleston, S. C., Great Lakes (Chicago), Mare Island, Calif., and Puget Sound, Wash.

Applicants must be citizens of the United States and must submit satisfactory evidence of preliminary and medical examination. The first stage of the examination is for appointment as assistant surgeon in the Medical Reserve Corps and embraces anatomy, physiology, materia medica and therapeutics, general medicine, general surgery and obstetrics. The successful candidate must attend a course of instruction at the Naval Medical School which will begin on or about Oct. 1, 1916. During this course he receives a salary of $2,000 per annum with allowance for quarters, heat and light and at the end of the course, if he successfully passes examination in the subjects taught in the school, he is commissioned assistant surgeon in the Navy to fill a vacancy. Candidates must be between 21 and 30 years of age, graduates of a reputable school of medicine and must apply for permission to appear before a board of medical examiners. The application must be in the handwriting of the applicant and accompanied by letters or certificates from two or more persons of good repute, testifying from personal knowledge, as to the good habits and moral habits of the applicant; a certificate to the effect that the applicant is a citizen of the United States; a certificate of preliminary education from an accepted high school or an accepted equivalent; a certificate of medical education giving the name of the school and date of graduation, and a certificate regarding hospital service or special education and professional advantages which the applicant has had.

FOREIGN

Deaths Abroad.—C. Vincenti, professor of hygiene at the University of Milan and founder and director of the *Corriere Sanitario*, later changed to the *Avenire Sanitario*, aged 52.——O. Ughi, professor of pathology at the University of Parma.

Octogenarian in the Field.—A Berlin exchange states that his eighty-first birthday was recently celebrated by Dr. Hertwig of that city, now on active service with the troops at the front. This is his fourth military campaign, as he served in 1864, 1866, and in the Franco-Prussian war, and he is still well and active.

Extend Embargo Lists.—In Denmark cotton goods and dried casein have been added to the list of products subject to embargo. In France various food products, fruit, gum, mica, petrolatum and various types of sacks have been placed on the embargo list. England has prohibited the exportation of cotton wadding, cotton wool and iron ore of all descriptions to all destinations.

Hospital Factor for Peace.—Baron Shibusewa, the Japanese financier, at a luncheon given in his honor in New York by the American council of St. Luke's International Hospital, Tokyo, said that the completion of the institution would prove a factor toward international peace. The plans for the hospital were endorsed by the emperor, who had contributed $25,000 toward the fund. The institution, he believed, would do much to bring closer relations between the United States and Japan.

Bordeaux Exchange Resumes Publication.—In November the *Journal de Médecine de Bordeaux* issued its first number since August, 1914. It is to be continued as a monthly. This first issue contains a tribute to the twenty medical students at the University of Bordeaux who have fallen in the war. It also lists the honors that have been conferred on members of the medical faculty and student body for conspicuous gallantry. The leading and only original article is a clinical study of 330 cases of typhoid in soldiers.

BERLIN LETTER

BERLIN, Nov. 9, 1915.

The War

TREATMENT OF WOUNDS IN WAR

In the sixth issue of "Military Surgery," published as a part of the *Beiträge zur klinischen Chirurgie*, Professor von Bruns discusses at great length the treatment of wounds received on the battlefield. He says that the causes of shot wounds are entirely different in the present war from what they were in previous wars. The wounds caused by artillery fire greatly outnumber the wounds caused by gun fire, being twice as numerous, whereas formerly they constituted from 5 to 25 per cent. of all injuries. Therefore, the number of large open wounds is also greater than the number of small bullet wounds. Bullet wounds are practically never infected, whereas shrapnel and shell wounds are always infected, primarily because of the large amount of tissue exposed, the nature of the wound, the tearing of the tissues, the time which necessarily must elapse between the infliction of the wound and the first-aid dressing, irrigation of the wound, finger contact, probing for bullets and tamponing. The lack of sufficient immobilization of the injured part during transportation, especially in the case of bone and joint wounds, is also responsible for the production of infection. The statement made years ago that the first-aid dressing practically determined the subsequent clinical course of the wound no longer holds true. The primary wound infection is now the determining factor, and the results to be expected from our present knowledge of treatment of wounds are not

Milk ticket used in Berlin for preferred consumers.

realized. English surgeons have stated that nearly all wounds, with the exception of gun fire wounds, were infected and that no antiseptic could be depended on for a germicidal effect. Sir Almroth Wright has discarded the use of bandages, which, when saturated with wound secretion, favor the retention of septic products. He recommends the use of a 50 per cent. salt solution with 0.5 per cent. sodium citrate in the form of a bath, irrigation or compresses. Under this treatment wounds apparently do very well in two or three days. Another English surgeon, Sir Watson Cheyne, saturates wounds with pure phenol (carbolic acid). The thin layer of necrotic tissue which results from this treatment is absorbed. The German war surgeons combat infection with the aid of the natural antibodies in the human body. This is accomplished first of all by placing the injured tissue absolutely at rest, immobilizing the extremities for bone and joint wounds. If the infection increases in severity, counter-openings are made. Pieces of bone and foreign bodies are removed from the wound by irrigating with sterile salt solution. When suppuration is present, a moist dressing is applied, one that is not covered by rubber tissue, so that evaporation is furthered rather than prevented. In very severe cases, resort is had to the continuous bath or continuous irrigation. Open wound treatment is also resorted to by some surgeons.

REGULATING THE BERLIN MILK DISTRIBUTION

For the purpose of regulating the distribution of milk, the Berlin authorities issue "milk cards" which give the holder the privilege of being among the first to receive milk. Children under 6 years of age, nursing mothers, and the sick

and decrepit are given the preference. Such persons are supplied with a "milk card" by the bread commission, and on presentation of this card to any milk dealer they are given first attention, but must call for this milk before a certain hour.

ANTHROPOLOGIC INVESTIGATION OF PRISONERS OF WAR

The president of the Austrian Anthropological Society, Professor Toldt, and his students have examined 3,700 prisoners, making thousands of measurements. This investigation has determined that among these people, as among other nationalities, there does not exist a pure race but only mixtures. All of these people represent various racial elements which have been molded into one people by language and circumstances. Even the Poles consist of five such groups. In order to isolate these types, one must examine a large number of persons. The type as such does not appear to be conveyed by heredity, but certain features of each type appear in the offspring. To carry on such an investigation properly one must follow these racial characteristics geographically; for instance, in northwest Russia and extending through the country down to the Ural mountains are found the Finns, and coming from the east westward from the Ural mountains to the Volga, one finds the Mongolian races. Among the former the prevailing type was that of the great Russian, numbering 52,000,000 and resulting from a mixture of the Slav with the Finn, the German, the Tartar, etc. There were three different types: two blond and one brunette. The little Russians, together with their relations in Galicia, Bukovina and Hungary, number 32,000,000. The white Russians number only 3,500,000, and are said to speak the purest Russian dialect. The Litauers and the Slavs in East Prussia number 32,000,000. They live in the governments of Kowno and Wilma, and also in Grodno and Suwalki. They are said to speak the oldest of old Indo-Germanic tongues. They are Catholics, but are strongly inclined to pagan practices.

Alcohol and Crime

Speaking of the relationship of alcohol and crime in the Prussian statistics bearing on prisoners for 1913-1914, the president of the supreme district court, Mr. Lindenberg, says: Of the new male prisoners, 1,141, or 26.6 per cent. (24.2 per cent. in the previous year), committed the deed while intoxicated. Among the female prisoners this percentage was considerably lower, 5.4 per cent. Among the male prisoners 15.1 per cent., and among the female prisoners 12 per cent., were habitual drinkers.

LONDON LETTER

London, Nov. 19, 1915.

Medical Research Under the Insurance Act

It may be remembered that under the national health insurance act an annual sum amounting to 2 cents for every insured person was granted for medical research. In the year 1914 this amounted to $275,000. The outbreak of war has modified the scheme to some extent and temporarily, but the main idea stands. Indeed, the war has afforded a fresh field of inquiry. Thus at the outbreak of war it was determined to attack the many problems which were bound to arise on the field. The services of Sir Almroth Wright were secured to investigate the bacteriology of wounds, with what results is already well known. Sir Almroth's work, indeed, has been revolutionary. Researches were also undertaken on the poisons producing gas gangrene, and on the nature of typhoid fever. The work on antiseptics, in which many investigators have been engaged, has been assisted by the Research Committee. The committee also sent Dr. Freeman, of St. Mary's Hospital, to Galicia in 1914 to investigate strains of cholera infection and to bring cultures to this country so that if need be—that is, if the disease spread—vaccines could be prepared. The work of Lieutenant-Colonel Leiper, which has resulted in the discovery of the life history of the Egyptian bilharzia—a worm producing a disease which has long been regarded as one of the plagues of Egypt—was also assisted by the committee. Lord Cromer, at the Royal Society of Medicine, characterized this work as of first-class importance to Egypt. In the epidemic of cerebrospinal fever which lasted from January to June, much research work was accomplished. Many of these researches have confirmed the fact that various conditions influence the virulence of bacteria, so that bacteria of the same type may show very different properties at different times. Work is to be carried on to determine these factors more precisely, for it has often been suggested that on these epidemics other outbreaks of disease depend. Other special researches include those on dysentery, industrial fatigue and the health of munition workers, the disorders of the soldier's heart, and gunshot wounds. All this material will be made available in the official medical history of the war. The peace plans of the committee were no less important, and they will, no doubt, be carried out at a later period. They comprise investigations of such diseases as tuberculosis, rickets, diabetes, rheumatic infections, rheumatoid arthritis, oral sepsis and heart disease. It is believed that the coordinating work of this committee marks the opening of a new era in medicine in this country which will differ from the old in that general statements founded on imperfect observation will be replaced by accurate knowledge gathered by careful and qualified observers in all the fields of medical work, correlated by competent statisticians, and presented in a form calculated to be of lasting value.

Dr. Charlton Bastian

Dr. Henry Charlton Bastian, F.R.S., F.R.C.P., has died at his residence, Chesham Bois. He was educated at University College, London, where he was successively professor of pathologic anatomy, and professor of medicine. In medicine he was principally interested in nervous diseases. He was one of the brilliant galaxy which included Hughlings Jackson, Gowers and Ferrier, who formed the staff of the National Hospital for the Paralyzed and Epileptic, and created a British neurology. His principal works, many of which were translated into other languages, were "The Brain as an Organ of Mind"; "Paralyses: Cerebral, Bulbar, and Spinal," and "Aphasia and Other Speech Defects," but it was by his work on the nature and origin of life that he was most widely known, because of the stoutness and persistence with which he maintained, contrary to all orthodox opinion, that life can arise from inorganic material. He enclosed various materials in glass tubes, which he then sealed up and raised to temperatures of from 130 to 145 C. for from five to twenty minutes. According to all orthodox opinion, this should have killed every living thing in the tubes, yet on opening the tubes nine months later Dr. Bastian declared that he found living micro-organisms. His views were hotly contested from the moment when, in 1870, he first published them. Huxley and Tyndall entered the arena against him, and even Pasteur was drawn into controversy. Science accepted the arguments of Pasteur, and rejected those of Bastian. Yet he did not lose heart, but continued to wage his fight to the end of his long life. His first book on this subject, "The Beginnings of Life," was published as long ago as 1872. In 1904 appeared "Studies in Heterogenesis," in 1905 "Nature and Origin of Living Matter," and in 1907 "Evolution of Life." Only a few years ago he had an embittered controversy with the Royal Society, of which he was a fellow, because of its rejection of his Memoir "The Origin of Life," in which he once more with unabated vigor assailed the prevailing doctrines.

The Protection of Patients in the London Hospitals Against Air Raids

The Zeppelin raids on London are a distinct danger to the patients in the numerous hospitals. Indeed, more than one hospital had a narrow escape, being missed by only a few yards. The problem of helpless patients unable to flee in case the hospital was set on fire by an incendiary bomb is a difficult and distressing one. During the night when these raids occur the staff which remains on duty would be quite unable to remove the patients with sufficient speed. All the great hospitals contain wounded soldiers in considerable numbers, and it was felt that it would be a reproach to London if any of these men, who had suffered so much already for their country, were to be burnt to death at home. After the outbreak of war, volunteer corps consisting of men past the age eligible for the army (40 years) have been formed all over the country for home defense. The idea occurred to one of these corps to provide a detachment of men each night at a large hospital which appears to be in a particularly dangerous situation, so as to be ready to remove the patients from any wing which might catch fire. Their services were gladly accepted by the hospital authorities, who made the following arrangement: Each man is provided with an ash stretcher pole. The patients are divided into three classes: (*a*) those in bed who cannot walk or be carried; (*b*) those who can be carried on the back, or by bandy chair; (*c*) those who can walk. The mattresses of the first group at all times have under them a canvas sheet with a wide hem on each side through which poles can be passed, thus forming a stretcher. A supply of these sheets is provided in each ward, and it is the duty of the sister

to see that one is placed under the mattress of every bed occupied by a patient who is too ill to be carried. Each of these beds is indicated by a crimson tape, so that the stretcher-bearers will know at a glance which patient they have to remove on the improvised stretchers. The third group will be directed and aided to leave the wards by the emergency staircases at the ends of the wings while the patients who have to be carried are being removed by the main staircase.

Sanatogen Again

The eclipse of this fraudulent nostrum produced by the war is only partial. Though all trading with Germany is prohibited, there is nothing to prevent the stuff being produced in this country and exploited in the usual manner so long as none of the profits are sent to Germany. However, the protection of the patent disappears for the time, and, as announced in a previous letter, a British company has taken advantage of the fact and produced an article called sanaphos, which, it claims, is much better than sanatogen. Sanatogen has just obtained a gratuitous advertisement by a question in Parliament as to whether a German alien enemy is carrying on the business and why he has not been interned. The government reply was that the London business of the Sanatogen Company was now independently carried on in the interests of this country under a British supervisor appointed by the board of trade, and any profits are paid over to the public trustee. The case of the individual referred to was carefully considered, who, in view of the special circumstances, recommended that he should be exempted from internment on condition that a bond for $5,000 for his good behavior was entered into by two British sureties.

PARIS LETTER

PARIS, Nov. 18, 1915.

The War

TREATMENT OF HEAD WOUNDS FROM FIREARMS

This subject was discussed at length at the Réunion médicale de la VI-e armée, at which Dr. Paul Mathieu of Paris reported fifty cases of this nature. All the wounds were surgically explored, no matter how insignificant the injury to the scalp seemed. When the external surface of the skull was merely grazed the skull was opened up so that the condition of the inner side might be observed. The dura mater was uncovered and incised in one case in which the skull was intact, but the patient had crises of localized epilepsy. Twenty-seven other patients had lesions of the bone or of the brain, and eight patients with osseous lesions without perforation of the dura mater all made an operative recovery. The operation consisted of complete removal of fragments. The existence under the intact dura mater of a hematoma or of a focus of cerebral contusion does not always necessitate incision of the dura mater, which may produce serious complications. In cases of serious cerebral signs, however, evacuation of the subdural hematoma may be indicated. It should be recognized that often patients with insufficiently drained wounds of the head have died in the base hospitals from late infectious complications. Such patients should not be too early regarded as cured. Permanent infirmities are frequent after wounds of the head. Some patients retrogress completely, others partially. Neurologists should follow these patients for a long while.

Dr. Ruotte emphasized the very great difference in the seriousness of wounds of the head in accordance with the involvement or noninvolvement of the dura mater. When, during an operation, one finds a dura mater intact but tense and glistening, the surgeon should consider opening it. Ruotte thinks that in such cases simple puncture of the dura mater may give good results. Trephining is specifically indicated if one finds the least cranial lesion, even the most superficial. If it is merely a scratch of the external surface of the skull, trephining should always be employed. Dr. Reverchon has had occasion since the beginning of the war to trephine 100 times. He finds that wounds of the scalp should always be explored with the greatest care, and that often trephining, where there is a very slight wound of the external surface, enables the surgeon to find lesions that might have been overlooked. In cases of hematoma of the dura mater the great danger of systematic incision is infection. Therefore, as Ruotte says, there is much reason to use simple puncture in these cases. Reverchon punctured the dura mater, not with a Tuffier needle, which would be unsatisfactory, but with the point of the bistoury. When the dura mater presents a wound from fragments of bone or projectile it should be opened up, but this operation is followed by cure only if it is done under conditions of scrupulous asepsis. Patients with wounds of the dura mater should not be operated on in ambulances of the first line. They should be taken to the rear and operated on only in a place where perfectly aseptic surgery is possible.

LABARRAQUE'S SOLUTION AND DAKIN'S SOLUTION

At a recent session of the Société de chirurgie de Paris, Dr. Pierre Delbet, professor in the surgical clinic at the Faculté de médecine de Paris, called attention to the fact, already mentioned in THE JOURNAL (Sept. 4, 1915, p. 880), that Labarraque's solution and the antiseptic solution of Dakin are obtained by the same process. The solution of sodium hypochlorite of the French Codex or Labarraque's solution is obtained by double decomposition of calcium hypochlorite (the chlorid of lime of commerce) and sodium carbonate; the calcium, united to the carbonic acid, is precipitated and the sodium hypochlorite remains in solution with the excess of sodium carbonate. The antiseptic solution of Dakin is obtained in the same way, but to the concentrated sodium hypochlorite resulting from the double decomposition is added a certain quantity of boric acid which principally neutralizes the original alkalinity of the solution. The long-known favorable effect of the hypochlorite solutions of commerce should be attributed to their irritant action on the tissues. The treatment to which Dakin subjects the hypochlorite solutions in order to lessen their irritant effect can only diminish their efficacy in the treatment of wounds. This is demonstrated every day.

Professor Qénu believes that Delbet is right in calling attention to the irritating effect which certain chemical substances have on wounds. The antiseptic may be useful, in fact, not only because it does not destroy the living cells, but also because it excites their vitality, causes the proliferation of the leukocytes and consequently hastens the elimination of elements altered by traumatism and microbes or their toxins.

EXTRACTION OF BULLETS FROM THE BLADDER BY THE NATURAL CHANNELS

At a recent session of the Académie de médecine de Paris, Dr. F. Legueu, professor of the clinic of diseases of the urinary tract at the Faculté de médecine de Paris, read an interesting paper on this subject. Rifle shot and grape shot are of such size and shape that they may be easily and rapidly removed through the urethra without incision. For this purpose Legueu uses a special lithotrite modified for the purpose. The instrument, introduced into the bladder by the urethra, seizes the ball by its point on touching it and in less than a minute the extraction is made without anesthesia. One patient left the hospital the next day. A superior officer who had been unable to walk for eight months was soon enabled to resume his duties. The most difficult thing is to ascertain that the ball is actually in the bladder in cases in which it comes from a very distant part of the body and is embedded in the tissues during the whole of the cicatrization of the wound. When radiography shows a pelvic ball two successive plates should be made, changing the patient's position. If the ball shifts its place, this shows that it is in the bladder. Only balls that are free in the vesical cavity can thus change their position. Cystoscopy, however, is the most useful method of exploration for giving an idea of the presence, the situation, the mobility of the ball, the condition of its surface and all the data necessary for the extraction by the natural passage, which remains the best and most expeditious method.

RELIEF OF PHYSICIANS AT THE FRONT

I mentioned in a previous letter (THE JOURNAL, Nov. 20, 1915, p. 1831) that the minister of war had decided that physicians at the rear who had not yet taken their place in the armies should replace their comrades fatigued by fifteen months of campaign. Out of over 8,000 physicians at the front, only 1,500 have asked for relief on this ground, but there are no more than about 600 of these physicians fit for service who have not been at the front. The time set for each physician's departure is determined by his age and by his service in the army. The exchange is made regularly, but not too frequently, so that there is not likely to be any disorganization which might affect the patients unfavorably.

THE FRENCH WOUNDED EMERGENCY FUND

The undersecretary of the military medical service has just decided to accept the aid of the French Wounded Emergency fund, an Anglo-American society, the delegate of which in

France is Mrs. Hendry, née Charcot. The purpose of the society is to distribute in the various hospitals which receive patients from the army gifts for the improvement of the condition of the soldiers. The under secretary has therefore authorized Mrs. Hendry and fifteen of her collaborators to cooperate with the head physicians of the hospitals in distributing such gifts.

MEMORIAL TO DR. REYMOND

The general council of the department of the Seine and the prefect of police have placed in the surgical operating room at Nanterre the bust of Dr. Emile Reymond, who was a senator and surgeon of this establishment and who died bravely in an aviation reconnaissance of the army (THE JOURNAL, Nov. 21, p. 1868). The bust is the work of the sculptor Gauquié. The president of the republic and other high officials were represented at this ceremony. Several speeches were made recounting the career and the glorious death of Dr. Reymond.

THE WAR AND THE STATISTICS OF POPULATION OF FRANCE IN 1914

The *Journal officiel* has just published the statistics of population of France in 1914. Ten French departments are still, in whole or in part, under invasion. The figures, therefore, apply to only seventy-seven departments instead of eighty-seven, and are also incomplete with regard to deaths during the first five months of hostilities.

The following are the figures:

1. The number of deaths is provisionally estimated at 647,549, an increase of 58,740 over 1913 (588,809).

2. The number of births is estimated at 594,222, a decrease of 10,232 from 1913 (604,454).

3. The excess of deaths over births was 53,327. This indicates that the population of France diminished last year by 53,327. In 1913 there was an insignificant increase of 15,645.

4. The number of marriages was 169,011, a decrease of 78,742 from 1913 (247,753).

5. The number of divorces was 7,884, a decrease of 4,460 from 1913 (12,344).

To estimate the influence exercised by war on the status of the population, it is interesting to compare the changes in population in seventy-seven departments during the last semester of 1913 and the corresponding semester of 1914:

1. During the second semester of 1914 the number of deaths recorded was 323,018, as against 280,804 during the corresponding period of 1913, an increase of 42,214.

2. The number of births diminished from the one year to the other by 6,676 (300,304 in the second semester of 1913 and 293,628 in the second semester of 1914).

3. The number of marriages decreased by 65 per cent.: 43,585 in the second semester of 1914 against 122,754 in the second semester of 1913.

4. The number of divorces diminished from 6,307 to 2,014.

5. The number of illegitimate children increased by more than 2,000: 19,798 in 1914 against 17,684 in 1913.

NERVOUS AFFECTIONS CAUSED BY BURSTING OF SHELLS IN THE PATIENT'S VICINITY

At a recent session of the Réunion médico-chirurgicale de la X-e armée, Drs. Gustave Russy and J. Boisseau read an interesting paper on this subject, based on sixty-seven cases of nervous affections provoked by bombardment. The conditions in which these disturbances occur are always the same: bursting of a shell of large caliber near by, killing or wounding neighboring comrades, more or less prolonged loss of consciousness, followed by an outbreak of nervous disturbances. The latter may be grouped in three classes:

1. Disturbances of hearing and speech (deafness, loss of speech, deafmutism, stammering). The patients sometimes present an expression of terror and mental confusion, sometimes an impassive and stupefied countenance, sometimes an expressive mimicry, gesticulating, pointing to their ears, demanding to write.

2. Various nervous complications, such as trembling, convulsive crises, astasia, paraplegia, etc.

3. Mental disturbances such as confusion with stupor and delirious ideas.

Somatic signs sometimes observed are a very slight and temporary elevation of temperature with often persistent headache. In eleven out of sixteen cases of deafness, examination revealed the presence of small lesions, generally old, sometimes recent. In seventeen out of nineteen cases examination of the cerebrospinal fluid gave negative results (generally the fluid trickled drop by drop; there was no hyperalbuminosis or lymphocytosis); in two cases there were positive results (slight hyperalbuminosis in one, slight lymphocytosis in the other). The two patients presented mental confusion and the second had albuminuria.

Cure always followed the treatment, immediately (that is, within a day), or tardily (within two or three days in the intense forms).

The complications presented in the sixty-seven cases could all be classified as functional or hysterotraumatic. There are no signs which give reason to suspect a disturbance of the central nervous system, no reflex trouble, no chemical or cytologic modification of the cerebrospinal fluid. All the symptoms disappeared very rapidly under suggestion. The ease and rapidity of cure of these patients treated at a date very near the onset of the condition contrasts singularly with the slowness and even the failures observed in the zone of the interior. There would appear to be considerable practical value in early treatment from the military point of view.

LOCALIZED TETANUS

At a recent session of the Académie de médecine de Paris, Professor Pozzi reported a case of paraplegiform tetanus localized in the lower limbs and appearing early (five days after the wound) following a serious wound of the left foot from a fragment of shell necessitating submalleolar amputation. Extremely painful spasms, at first clonic, then tonic, remained localized in the left leg and thigh with a temporary irradiation to the right leg depriving the patient of all rest and sleep. The temperature, very high at first, fell after the operation, performed the tenth day. The stump healed normally and the general condition became very good but the contracture of the left leg continued. The treatment consisted in strong doses of bromids, chloral or other sedatives, as well as massive doses of antitetanic serum. Great improvement resulted. The convulsions ceased but the contracture persisted, holding the leg strongly flexed on the thigh. The prognosis is good but it is to be feared that the stiffness and flexure of the leg will continue for a long time.

Cases of partial or localized tetanus are very rare. A form of delayed cephalic tetanus is well known, but cases of tetanus localized in a single limb, or monoplegia, are quite unusual up to the present. In a recent thesis Ramirez-Martinez was able to collect only two observations. Both were cases of wounds of the foot. The appearance of tetanus was very much delayed (three months for one and fifteen days for the other). The observation of Pozzi is the first case in which incubation was so short (five days). It is therefore a case of precocious localized tetanus, and also the first case of partial paraplegiform tetanus.

Marriages

GEORGE LAUMAN LAVERTY, M.D., Harrisburg, Pa., to Miss Rebekah Eleanor Kendig of Roland Park, Md., November 20.

RALPH HIRAM KNAPP, M.D., Youngsville, Pa., to Miss Margaret I. Johnston of Clinton, Mass., September 1.

GUY EDWARD CAMPBELL, M.D., Plentywood, Mont., to Miss Helen Collins of Barnesville, Minn., November 10.

HENRY L. SCHELLING, M.D., Brooklyn, to Mrs. Isabel Hauson Woodford of New York City, November 23.

CLARENCE GILBERT GOODWIN, M.D., Chicago, to Mrs. Minnie Starr Grainger of Belvidere, Ill., November 24.

JOSEPH ANTHONY STOCKLER, M.D., Reading, Pa., to Miss Ellen McKeon of Newark, Del., November 27.

SEAVY HIGHSMITH, M.D., Fayetteville, N. C., to Miss Ethel Johnson of Red Springs, N. C., November 23.

JOSEPH ALOYSIUS HENSKE, M.D., to Miss Kathryne McClanahan, both of Omaha, November 3.

SHERMAN GRANT BONNEY, M.D., Denver, to Mrs. Jessie Ellwood Ray, in St. Louis, December 1.

GEORGE WARREN THOMPSON, M.D., to Mrs. Julia Williams, both of Winamac, Ind., November 25.

JOSEPH H. BLOOMER, M.D., to Mrs. Idella M. McDavitt, both of Quincy, Ill., November 17.

ROY BROWN SEELY, M.D., to Miss Emma Gissel, both of Brooklyn, August 4.

Deaths

Frederick William Russell, M.D. New York University, New York City, 1870; aged 70; a member of the Massachusetts Medical Society; hospital steward, U. S. V., during the Civil War; formerly physician to the Children's Hospital, Baldwinsville, and vice president of the institution; chairman of the Board of Health of Winchendon, Mass., and proprietor of The Highlands Sanitarium, Winchendon; eminent as an entomologist and a member of the American Entomological Society; for the last three years a resident of Dallas, Texas; honorary president of the Texas Harvard Club and an honorary member of the Dallas Medical and Surgical Association; died at the home of his daughter in that city, November 20.

George Reuling, M.D. University of Giessen, Germany, 1866; aged 76; formerly assistant to Dr. Pagenstecher of Weisbaden, Germany; a practitioner of Baltimore since 1868; one of the founders of the Eye and Ear Hospital as an adjunct of the Maryland General Hospital; a pioneer in operative surgery of the eye and ear; lecturer at a number of medical schools in Baltimore and professor and later emeritus professor of ophthalmology and otology in Baltimore Medical College; ophthalmologist on the staff of the German Hospital; of late years an art connoisseur; died in the Maryland General Hospital, November 25, from rheumatic endocarditis.

Edward Cummings, M.D. Medical College of Virginia, Richmond, 1903; aged 44; a Fellow of the American Medical Association; assistant surgeon to the Hinton (W. Va.) Hospital and bacteriologist to the Chesapeake and Ohio Railway; at one time city editor of the *Daily Journal and Tribune* of Knoxville, Tenn.; a veteran of the Spanish-American War; a prolific writer on tuberculosis, to the study and treatment of which he had devoted the last years of his life; died at his home in Hinton, W. Va., November 25, from pulmonary hemorrhage.

John C. Hutton, M.D. University of Pennsylvania, Philadelphia, 1867; aged 69; first health officer of Harrisburg, Pa.; for many years president of the City Board of Health and a member of the staff of the City Hospital; founded the Municipal Hospital for Contagious Diseases; for two terms a member of the board of education and for three years a member of the common council of Harrisburg; died at his home in Elkwood, New Cumberland, Pa., November 20.

Henry McKee Tucker, M.D. University of Maryland, Baltimore, 1899; aged 40; of Raleigh, N. C.; a member and formerly treasurer of the Medical Society of the State of North Carolina; professor of obstetrics in the University of North Carolina and of gynecology in Leonard Medical School, Raleigh; who underwent operation for mastoiditis at Rex Hospital, Raleigh, on November 22, died from a secondary meningitis, November 24.

Benjamin Joy Jeffries, M.D. Harvard Medical School, 1867; aged 82; a member of the Massachusetts Medical Society and American Ophthalmological Society; formerly consulting ophthalmic surgeon to the Massachusetts Charitable Eye and Ear Infirmary, State Hospital and New England Hospital for Women and Children; author of "Color Blindness, Its Dangers and Detection"; died at his home in Boston, November 21.

Andrew J. Martin, M.D. University of Buffalo, N. Y., 1887; aged 55; a Fellow of the American Medical Association and a well-known practitioner of North Tonawanda, N. Y.; a member of the Board of Health and health officer for several years; coroner of Niagara County for three years; died in the German Deaconess Hospital, Buffalo, November 24, five days after an operation for disease of the intestines.

Fayette Kent Waller, M.D. Miami Medical College, Cincinnati, 1878; aged 68; a veteran of the Civil War; and for many years a practitioner of Wabash, Calhoun and Madison counties, Ill.; who had been an inmate of the Odd Fellows Home, Mattoon, Ill., for seven years; died in that institution, November 19, from cerebral hemorrhage.

William F. Hani, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1864; Rush Medical College, 1868; aged 72; surgeon of the One Hundred and Seventy-Second Ohio Volunteer Infantry during the Civil War and afterward a practitioner of Middlebury, Ind.; died at the Soldiers' Home near Lafayette, Ind., November 23.

William Frisbie Lewis, M.D. College of Physicians and Surgeons in the City of New York, 1854; aged 85; for many years a practitioner, druggist and banker of Mankato, Minn.; a veteran of the Indian War of 1857; since 1887 a resident of California; died at his home in Palo Alto, Calif., November 18, from senile debility.

Frederick W. Messerve, M.D. Hahnemann Medical College, Philadelphia, 1885; aged 55; for many years resident physician at Hahnemann Hospital, Philadelphia; professor of ophthalmology in his alma mater and ophthalmologist to various hospitals in Philadelphia; died at his home in Berlin, N. J., November 22.

Thomas Ayars James, M.D. New York University, New York City, 1880; aged 65; a Fellow of the American Medical Association and president of the Luzerne County (Pa.) Medical Society in 1885; one of the best known practitioners of the Wyoming Valley; died at his home in Ashley, November 10, from heart disease.

LeRoy R. Craig, M.D. University of Louisville, Ky., 1895; aged 41; a member of the Nebraska State Medical Association; for several terms coroner of Scotts Bluff County, Neb., and county health officer and a member of the Board of Health of Mitchell; died at his home in Mitchell, November 24, from heart disease.

Elfred Rowe Barney, M.D. University of Michigan, Ann Arbor, 1872; aged 64; a Fellow of the American Medical Association; for twenty-one years a practitioner of Wattsburg, Pa.; for twenty years a member of the local school board and for twelve years its president; died at his home, November 17.

Daniel Berry, M.D. Jefferson Medical College, 1866; aged 80; a veteran of the Civil War, in which he served as assistant surgeon of the Eighty-Seventh Illinois Volunteer Infantry; later a practitioner and druggist of Carmi, Ill.; died at his home in that city, November 19, from cerebral hemorrhage.

J. Clayton Alexander, M.D. Chicago College of Medicine and Surgery, 1907, aged 48; formerly a Fellow of the American Medical Association; of Hope, N. D.; was injured by the overturning of his automobile about 4 miles south of Hope, November 6, and died at his home five hours after the accident.

John T. Kennedy, M.D. College of Physicians and Surgeons in the City of New York, 1861; aged 75; for nearly half a century a practitioner of New York City; for eighteen years chief surgeon to the New York Hospital; died in his apartments in New York City, November 26, from heart disease.

Godfrey J. D. Hindley. University of Oxford, England, 1892; L.R.C.P., London, M.R.C.S., England, 1897; aged 43; formerly a practitioner of Carpinteria, Calif., and of Hilo, Hawaii; was lost at sea at the Dardanelles, early in September, by the sinking of a transport on which he was on duty.

John Ezra King, M.D. State University of Iowa, Iowa City, 1897; aged 50; formerly a Fellow of the American Medical Association; died at his home in Anamosa, Iowa, from the effects of cyanid of potassium believed to have been self-administered with suicidal intent, while of unsound mind.

Arthur Irving McCumber, M.D. Rush Medical College, 1905; aged 38; of Lewiston, Ill.; a patient at the Wilgus Sanitarium, Rockford, on account of nervous breakdown; threw himself under an interurban car about a mile from Rockford, November 20, and was instantly killed.

George Moses Hawkins (license, Kansas, 1901); aged 78; a practitioner since 1857; surgeon of the Tenth Pennsylvania Volunteer Cavalry during the Civil War; formerly a member of the Kansas Medical Society; died at his home in Dexter, Kan., October 2, from cerebral hemorrhage.

Samuel Morrow Crawford, M.D. University of Pennsylvania, Philadelphia, 1878; aged 63; a member of the Medical Society of the State of Pennsylvania; for eleven years chief medical inspector of the Pennsylvania System in Harrisburg, Pa.; died at his home in that city, November 20.

William Hambleton Tolson, M.D. Baltimore University School of Medicine, 1890; for several years director of the academic department of the Maryland State Normal School and later principal of No. 80 Public School, Baltimore; died at his home in Baltimore, November 24.

Cornelius Joseph O'Neil, M.D. Western Pennsylvania Medical College, Pittsburgh, 1900; aged 40; chief medical examiner in the Pittsburgh Department of Charities, and for twelve years school physician; died at his home in Pittsburgh, November 25.

William Henry Gesner Griffith, M.D. Hahnemann Medical College, Philadelphia, 1872; aged 82; assistant surgeon of Volunteers during the Civil War; one of the founders of the McKinley Hospital; died at the home of his son in Trenton, N. J., November 24.

Daniel Tufte, M.D. University of King Frederick, Christiania, Norway, 1893; of Pelican Rapids, Minn.; who was studying in Germany at the outbreak of the European war and joined the medical staff of the German army; died in Germany, November 10.

George Edwin Pinkham, M.D. Dartmouth Medical School, Hanover, N. H., 1863; aged 75; a member of the Massachusetts Medical Society; assistant surgeon of Volunteers during the Civil War; died at his home in Lowell, Mass., November 15.

Henry Philips Hirshfield, M.D. University of Pennsylvania, Philadelphia, 1878; aged 61; a member of the Medical Association of the State of Alabama; coroner of Mobile County for twenty-one years; died in the Inge-Bondurant Sanatorium, Mobile, November 14.

George Henry Charles Klie, M.D. Missouri Medical College, St. Louis, 1895; aged 70; a Fellow of the American Medical Association and a well-known practitioner of St. Louis; died in the St. Louis Mullanphy Hospital, September 24, from carcinoma of the stomach.

William A. Garner, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1885; aged 55; a Fellow of the American Medical Association; local surgeon of the Wabash System at Clayton, Ill.; died at his home in Clayton, November 14, from organic heart disease.

Edward L. Stewart, M.D. Vanderbilt University, Nashville, Tenn., 1891; aged 47; of Tampa, Fla.; a specialist on diseases of the eye, ear, nose and throat; formerly health officer of Tampa; is said to have committed suicide in Tampa, November 11.

John P. Dunnigan, M.D. Georgetown University, Washington, D. C., 1901; aged 41; a Fellow of the American Medical Association and a member of the surgical staff of Providence Hospital, Washington, D. C.; died in that institution, November 11.

Robert Davis Webb, M.D. Medico-Chirurgical College of Philadelphia, 1893; aged 44; of Philadelphia; died in St. Joseph's Hospital in that city, November 13, from fracture of the skull believed to have been accidentally sustained as the result of a fall.

John Calvin Webster, M.D. Harvard Medical School, 1867; aged 72; a member of the Illinois State Medical Society; a veteran of the Civil War; for forty-eight years a practitioner of Chicago; died at his home in Chicago, November 15.

C. Anton Holzer, M.D. University of Strassburg, Germany, 1878; aged 67; a practitioner and pharmacist of Uniontown, Wash.; for several terms a member of the city council and mayor for one term; died at his home in Uniontown, November 12.

David S. Tate, M.D. Chattanooga, Tenn., Medical College, 1900; aged 50; a well-known practitioner of South Pittsburg, Tenn.; died in the Newell Infirmary, Chattanooga, Tenn., October 2, after an operation for disease of the intestines.

Isaac Newton Kelly, M.D. Louisville, Ky., Medical College, 1907; aged 32; formerly a Fellow of the American Medical Association and a physician in the United States Indian Service; died in Garfield, Wash., November 8, from nephritis.

Robert A. Chambers, M.D. Tulane University, New Orleans, 1892; aged 48; for fourteen years a resident of Columbus, Ga.; died in the Columbus City Hospital, November 11, from peritonitis following an operation for appendicitis.

Adolf Decker, M.D. University of Wurzburg, Germany, 1881; aged 56; at one time president of the German Medical Association, Chicago; noted as a chess player and composer of chess problems; died at his home in Chicago, November 20.

Charles A. Fox, M.D. Medical College of Virginia, Richmond, 1868; aged 72; a Confederate veteran and for fifty-two years a practitioner of Beltsville, Md.; died at the home of his daughter in Washington, D. C., November 13.

John F. Kanawel, M.D. University of Pennsylvania, Philadelphia, 1879; aged 80; a member of the Medical Society of the State of Pennsylvania; died at his home in Penn's Creek, Pa., November 12, from cerebral hemorrhage.

George H. Peck, M.D. Detroit Homeopathic Medical College, Detroit, Mich., 1873; aged 77; for several years health officer of New Philadelphia, O.; died at his home in New Philadelphia, November 15, from arteriosclerosis.

Robert L. Morrison, M.D. College of Physicians and Surgeons of Kansas City, Kan., 1904; aged 37; a member of the Oklahoma State Medical Association; died at his home in Poteau, November 15, from nephritis.

William C. Q. Wilson, M.D. Starling Medical College, Columbus, Ohio, 1872; aged 66; formerly a member of the West Virginia State Medical Association; died at his home in Mannington, W. Va., November 14.

John Hockenhull, M.D. Medical College of Georgia, Augusta, 1855; aged 83; a Confederate veteran; for many years a practitioner and druggist of Cumming, Ga.; died at his home in that place, November 12.

Simeon J. Zabriskie, M.D. New York University, New York City, 1856; a member of the Medical Society of the State of New York; died at his home in Westwood, N. J., September 11, from senile debility.

William C. Day, M.D. Missouri Medical College, St. Louis, 1861; aged 78; emeritus professor of obstetrics in the American Medical College, St. Louis; died at his home in White Hall, Ill., November 13.

R. A. Turner (license Texas, 1907); aged 34; of Lovelady, Tex.; was found dead in the Cadillac Hotel, November 14, from the effects of chloroform believed to have been accidentally self-administered.

Orren Stoddard, M.D. Medical College of Indiana, Indianapolis, 1886; aged 72; a veteran of the Civil War and for thirty years a practitioner of Merom, Ind.; died in Indianapolis, November 12.

Philo Anderson Lutz, M.D. College of Physicians and Surgeons, Baltimore, Md., 1886; aged 55; formerly of Harrisburg, Pa.; died at his home in Baltimore, November 12, from heart disease.

Horace Besson Heysham, M.D. Jefferson Medical College, 1900; aged 42; formerly resident physician to the Charity Hospital, Norristown, Pa.; died at his home in Norristown, November 16.

Joseph M. Craig, M.D. New Orleans School of Medicine, 1861; aged 84; major surgeon in the Confederate service during the Civil War; died at his home in Amite, La., November 15.

William Moor Pulsifer, M.D. Harvard Medical School, 1886; Hahnemann Medical College, Philadelphia, 1887; aged 52; died at his home in Skowhegan, Me., October 31.

William Elvin Pritchard, M.D. Chicago Homeopathic Medical College, 1886; aged 56; died at his home in Los Angeles, November 14, from cerebral hemorrhage.

Joseph D. Tuthill, M.D. Bennett Medical College, Chicago, 1881; aged 87; a practitioner for more than sixty years; died at his home in Chicago, November 26.

William C. Yolton, M.D. Western Reserve University, Cleveland, 1887; aged 68; died at his home in Frankfort Springs, Pa., November 12, from pneumonia.

Charles C. Pierson, M.D. University of Louisville, Ky., 1907; aged 37; of Kiefer, Okla.; died at the home of his mother near New London, Ia., November 15.

J. M. C. King (license, Twenty-Seventh Judicial District Board, Texas, 1880), aged 63; died at his home in Merkel, Tex., August 26, from diabetes.

Edwin Forrest Philips, M.D. Jefferson Medical College, 1871; aged 66; died at his home in Tower City, Pa., November 17, from pneumonia.

Herman C. Block, M.D. Chicago Homeopathic Medical College, 1885; aged 63; died at his home in Milwaukee, Wis., November 10.

Henry Clay Stone, M.D. Louisville, Ky., Medical College, 1892; aged 70; died at his home in Constantine, Ky., November 11.

Levi Ormsby Johnson, M.D. University of Michigan, Ann Arbor, 1868; aged 74; died at his home in Chicago, November 15.

John Henry DeWitt, M.D. Jefferson Medical College, 1880; aged 60; died at his home in Philadelphia, November 14.

John W. Fawdrey, M.D. New York Homeopathic Medical College, 1892; died at his home in Corfu, N. Y., November 10.

Robert F. Taylor, M.D. Pulte Medical College, Cincinnati, 1877; aged 66; died at his home in Napa, Calif., November 8.

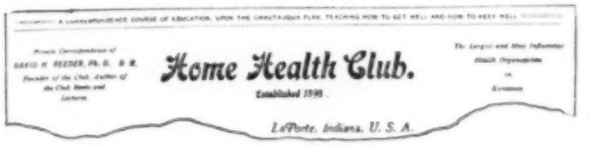
The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE HOME HEALTH CLUB

David H. Reeder's Ingenious Scheme for Advertising "Patent Medicines"

The medical mail-order faker's most valuable asset is his mailing list and obtaining this list is his greatest item of expense. David H. Reeder, one time of Laporte, Ind., but now of Chicago, has solved the problem in a way which makes up in ingenuity what it lacks in honesty. David H. Reeder is the president and, apparently chief owner, of the "Home Remedies Company," originally of Laporte, Ind., now at "Cottage Grove Avenue, opposite Fiftieth Place, Chicago." The company is a "patent medicine" concern that sells its remedies on the mail-order plan. The "Home Health Club" has its headquarters with the Home Remedies Company but



Home Health Club.
Established 1898
The Largest and Most Influential Health Organization in Existence
Private Correspondence
DR. DAVID H. REEDER
Founder of the Club, author of the Club Books and Lectures.
LAPORTE, INDIANA, U. S. A.

ADDRESS ALL CORRESPONDENCE TO THE HOME REMEDIES COMPANY, LAPORTE, INDIANA
CAPITAL STOCK $100,000
The Home Remedies Co.
GRANDMOTHERS HERB REMEDIES
MODERN HOME REMEDIES ETC.
La Porte, Ind. U.S.A.
TRADE MARK

Some letterheads of the "Home Health Club" and the "Home Remedies Company" when these were operated at Laporte, Ind. "Dr." David H. Reeder calls himself "founder" of the "club," and he is president of the "patent medicine" concern.

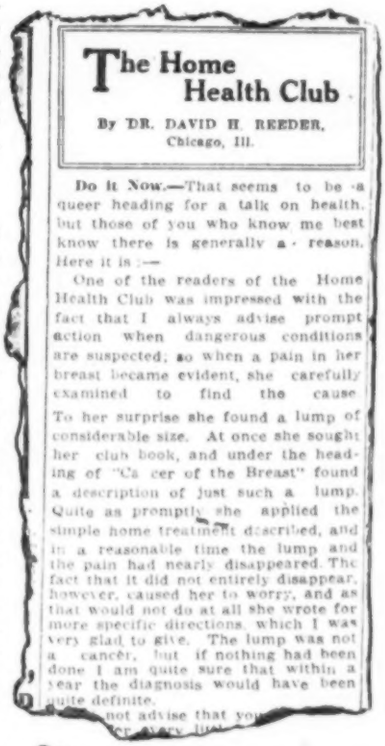
advertises its address as "5039 Cottage Grove Avenue, Chicago." The "founder" of the Home Health Club and the author of the "Club Books and Lectures" is David H. Reeder.

Reeder[1] poses—in print—as a physician. A careful search of all available records, and they are extensive, fails to show that Reeder ever was graduated by a medical college or ever was granted a license to practice medicine by any state. In the past, Reeder has not hesitated to put "M.D." after his name; more recently he has become wary. Volume I of the Home Health Club was written, according to the title page, by "David H. Reeder, M.D., Ph.D."; Volume III of the Home Health Club had for its author, according to the title page, "David H. Reeder, D.O., Ph.D."

Reeder's business is the selling of (1) alleged health books (with a "Certificate of Membership" in the Home Health Club thrown in) and (2) "patent medicines," both on the mail-order plan. Reeder has worked out a novel idea for getting his customers. He has eliminated the chief item of "overhead expense" usually inseparable from the mail-order business, that of paying for advertising space. His scheme is to write to certain newspapers offering to furnish free "copy" for a "Health Department," to be conducted under the title "Home Health Club." To allay the suspicions that would, naturally, arise in the minds of those editors to whom such an offer came, the Home Health Club explains how it is able to furnish free "copy" for the newspaper. It asks that the "service" offered be given credit to the club "by name and address." Continuing, the letter to the editor says:

"Through this publicity inquiries are brought directly to the club which promotes the sale of the books, compiled and reprinted from the lectures in various papers to which they are furnished. These sales amply cover the expenses of the organization which explains how the club is enabled to provide you the matter free."

Notice that no reference is made to the "patent medicine" side of the enterprise. The sale of books alone is given as the excuse for furnishing free "lectures."



The Home Health Club

By DR. DAVID H. REEDER, Chicago, Ill.

Do It Now.—That seems to be a queer heading for a talk on health, but those of you who know me best know there is generally a reason. Here it is:—

One of the readers of the Home Health Club was impressed with the fact that I always advise prompt action when dangerous conditions are suspected; so when a pain in her breast became evident, she carefully examined to find the cause.

To her surprise she found a lump of considerable size. At once she sought her club book, and under the heading of "Cancer of the Breast" found a description of just such a lump. Quite as promptly she applied the simple home treatment described, and in a reasonable time the lump and the pain had nearly disappeared. The fact that it did not entirely disappear, however, caused her to worry, and as that would not do at all she wrote for more specific directions, which I was very glad to give. The lump was not a cancer, but if nothing had been done I am quite sure that within a year the diagnosis would have been quite definite.

I do not advise that you [illegible] every [illegible]

[illegible] a little [illegible] cotton in the inner corner of the eye. It is perfectly safe and very efficient.

All readers of this publication are at liberty at all times to write for information pertaining to the subject of health. Address all communications to the Home Health Club, 5,039 Cottage Grove avenue, Chicago, Ill., U.S.A., with name and address in full and at least four cents in postage.

PAMPHLET

To obtain a "sucker list" for his mail-order "patent medicine" business, Reeder offers to furnish newspapers with "copy" for a "health department" on the understanding that all inquiries are turned over to him. Here is a sample of the "copy."

HOW IT WORKS

The way in which Reeder's scheme works out may best be explained by detailing some specific cases. A young woman wrote to Reeder giving no details but stating that she was "weak and run down" and asking for advice. Reeder replied in a letter replete with platitudes regarding diet and exercise and suggested that the girl purchase "Home Health Club Book Vol. I," price $1, and carefully observe the directions given therein. For a tonic Reeder recommended "Re-New-U," which, he declared, "is excellent":

"Its influence upon the stomach, the liver, the bowels and the kidneys, as well as heart is the very best and I believe that it will be just the thing for you to take. It is sold under the name of Re-New-U by the Home Remedies Company at the price of $0.50 per box, $2.50 for six boxes."

Enclosed with the letter containing these recommendations was a descriptive price list of the Home Health Club publications. The correspondent was told that every purchaser of Volume I receives "a Certificate of Corresponding Life Membership." The day following the receipt of this letter and advertising brought the young woman a letter from the Home Remedies Company.

It is worth noting, here, that Reeder carefully avoids letting the public know that there is any connection between the Home Health Club and the Home Remedies Company. The Home Health Club's address is always given "5039 Cottage Grove Avenue, Chicago," while the advertising matter of the Home Remedies Company bears the address "Cottage Grove Avenue, opp. Fiftieth Place."

1. Reeder's connection with the so-called Children's National Tuberculosis Society has been referred to in these pages. A reprint of the matter will be sent on receipt of a two cent stamp.

"PATENT MEDICINES" BY THE SCORE

The letter from the Home Remedies Company contained "patent medicine" advertisements galore. The first one described, for Abscesses, costs $2. No. 4 for "Ataxia Locomotor" costs but 50 cents. The eleventh on the list is for Cancer and is priced at $2. The one for Cataract comes at $1, while "Cold Feet" may be cured for 50 cents. No. 42 for Insanity is another half-dollar preparation while No. 52 for Prostatitis costs $3. Then there is "Nocturnia" for

Home Health Club

LAPORTE, INDIANA

This is to Certify, that ... is a life member of the Home Health Club of LaPorte, Indiana, and is entitled to all of its privileges and emoluments upon compliance with the rules thereof.

"Certificate of Membership" in the Home Health Club, which goes with every purchase of Vol. I of the club books—price $1.00.

"unnatural losses, drains and weaknesses," which "Restores Virility, Strength and Efficiency," price, postage prepaid, only $2 a bottle! And "Grandmother's Pile Cerate" at 50 cents a tube must be considered cheap, as a "relief and cure" of any form of hemorrhoids. "Re-New-U" as the company's *pièce de résistance*, is, of course, played up to the limit; it will give you "Health, Vigor and Vim." In order that you may *look* as young as "Re-New-U" will make you *feel*, it is recommended that you use "Cutola," "which enables you to defy old age." For Cutola:

". . . would restore freshness and youthful appearance to the face of an old Arizona Indian."

Those who, like Ponce de Leon, are seeking something in this line should send in a "Combination Order: 6 Boxes of Re-New-U and 3 Bottles of Cutola, $5."

MAIL-ORDER CURE FOR PILES

Another case: A man writes in to Reeder asking him what can be done for a long standing case of hemorrhoids. No details are given regarding the case but Reeder comes back with all the glib assurance of ignorance:

"I believe that your case of piles can be entirely cured without having to resort to an operation."

As to the cause of the condition Reeder opines that "the bowels have very much to do with it," which sounds reasonable. For treatment:

"You will find in Home Health Club book, Vol. 3 much upon the subject that would enable you, if observed, to successfully treat yourself at home. The price of the Vol. 3 is $2.00."

Further, Reeder suggests that the gentleman suffering from piles "secure and use internally a preparation of tissue foods":

"The Home Remedies Co., Cottage Grove Ave., Opp. 50th Place, this city, handle them under the name of Modern Home Remedies and I will ask them to send you some circulars describing them."

The vision of Dr. Jekyll Reeder of the Home Health Club asking Mr. Hyde Reeder of the Home Remedies Company to send some advertising circulars to a sufferer from hemorrhoids is a touching one. But this was not all. Reeder recommends also that a 50-cent tube of "Grandmother's Pile Cerate" be purchased. This "will aid in putting the trouble under control but in order to gain the best results further measures are needed." The "further measures" are a set of "Weirick Rectal Dilators," price $3, sold, of course, by the Home Remedies Company.

CURING CANCER WITH "TISSUE SALTS"

But there is a darker side to the Reeder brand of quackery. One young woman wrote to Reeder describing a case of carcinoma of the breast. Reeder replied:

"From what you mention of your mother's condition I am inclined to think that the trouble may be one of Cancer of the Breast, and although such cases are considered quite severe by many physicians, they are not at all incurable. There are many who have been fully restored to health without surgery, just by following the Home Health Club method of treatment, as described in the Volume 2 under the heading, 'Breast Cancer.' I will suggest that you procure this book for your mother, and see to that she carries out the different suggestions given therein. By so doing I predict good results. The price of the Volume 2 is $3.00."

For this case Reeder recommended the "tissue remedies" for cancer sold by the Home Remedies Company, price $2, and declared that "Grandmother's Tumor Remedy," also sold by the Home Remedies Company, price $2, was "of great value for external use in cases of this kind." A nice business forsooth.

Any man who declares that many women with cancer of the breast have been fully restored to health without surgery falsifies. If he does this knowingly, and for the purpose of selling some wretched nostrums, he is a scoundrel; if he falsifies unknowingly, from the depths of abysmal ignorance, he is a dangerous quack.

CATCHING THE WOMEN

Much more could be written of the Home Health Club and the Home Remedies Company and other activities of David H. Reeder, did space permit. It would be interesting, for instance, to describe the devious methods by which the Home

Volume VI. First Quarter, 1913 Number 1

HOME HEALTH

QUARTERLY MAGAZINE

EDITED BY DR. DAVID H. REEDER

OFFICIAL PUBLICATION OF THE HOME HEALTH CLUB

Dr. David H. Reeder
Founder of the Home Health Club

Per Year A MAGAZINE DEVOTED TO Per Copy
Dollar HOME HEALTH, HYGIENE & SANITATION 15 cts

Home Health, the "official organ" of the Home Health Club. The advertising pages are devoted to the exploitation of the nostrums of the Home Remedies Company.

Remedies Company has exploited women. Take these excerpts from a letter sent out by the concern to a woman:

"While the scope of our ministrations are manifold, our chief aims are the alleviation and cure of relative diseases of the ovaries and womb and its appendages; Leucorrhoea, Prolapsus, Ulceration, Engorgement, Painful and Profuse Menstruation. . . . All replies will be held sacred, thus availing the most diffident and reticent of a guaranteed means whereby a perfect cure for each and all of women's ailments can be accomplished in the sanctity of home."

Reference, too, could be made to the attempt on the part of Reeder to sell stock in his "patent medicine" concern. The prospectus sent out was of the classic, "blue sky" type.

After stating that Reeder started in with an original investment of $4.60 and that the business had been developed until it was worth $126,000, doing a cash business of over $50,000 annually with net profits of 16 per cent., the prospectus declared that the company needed an additional $100,000 "to further advertise and push the sale of our Remedies, Foods, etc." There is the inevitable reference to fortunes made in the "patent medicine" business, and the cases of "Bromo Seltzer" and "Warner's Safe Cure" are cited, presumably for the purpose of exciting the cupidity of the prospective investor.

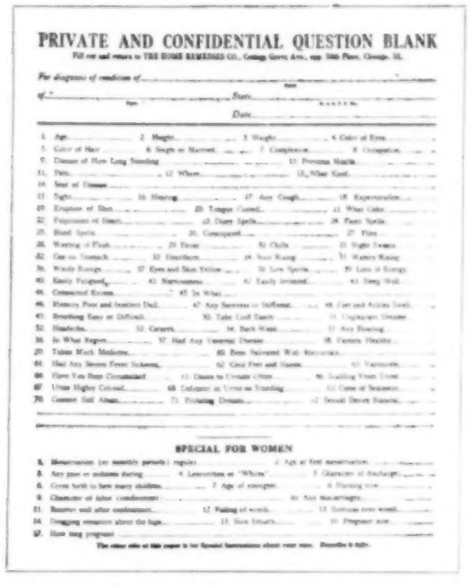
THE HOME HEALTH CLUB VOLUMES

It would be possible to show by quotations from some of the Home Health Club volumes Reeder's ignorance of even the fundamental truths of medical science. One quotation must suffice. Reeder solemnly assures the public, through one of his books sold as recently as October, 1915, that:

"Thirty-six cases of diphtheria developed in one school in Chicago by the leakage of sewer gas into a hot-air pipe."

In common with his kind Reeder does not omit an opportunity to blackguard the professions of medicine and pharmacy. In describing himself and his methods—as a physician, not as a "patent medicine" dispenser—he says:

". . . the druggists do not love me; the undertaker does not know me, and I miss his influence and my rebate; my patients have a quiet time; my bills, unfortunately, are small; can't get rich very fast; I don't have the advantage of swelling my bill for probate, for my patients are never too sick to keep tally on the number of visits."

The matter sent out by the Home Health Club, whether it be the so-called Home Health Club volumes, letters of "advice," *Home Health*, the alleged official organ of the Home Health Club or what not, has for its final object the exploitation of the nostrums sold by Reeder under the name of Home Remedies Company. The entire business is one of deception, misrepresentation and fraud. The newspapers are deceived into accepting the Home Health Club copy, the public is deceived by leading it to believe, inferentially, that there is no connection between the "patent medicine" concern—the Home Remedies Company—and the Home Health Club itself. Reeder's writings stand as monuments to his ignorance and his methods indicate a disregard for elementary truthfulness and common honesty.

PRIVATE AND CONFIDENTIAL QUESTION BLANK

SPECIAL FOR WOMEN

Every mail-order medical fraud has its "diagnosis blank." Here is a miniature reproduction of the one used by the Home Remedies Company.

The Development of Scientific Medicine.—An investigation of medical history shows two developmental periods which interlace with each other to some extent. In the early days our ideas of disease and its treatment were quite indefinite and general and were founded in the main on hypotheses and theories which had no particular scientific basis. In later years, research and experimentation have furnished the scientific basis for the establishment of various facts and for certain seemingly sound theories in addition. It is true some of the theories brought forth have been illogical deductions from the facts at hand, others have been formulated as a result of false evidence, improper technic, etc. It is fair to say, however, that medical theories propounded as the result of scientific research are much safer than those originating in the inner recesses of a dreaming mind. It can be said, therefore, that the earlier periods of generalization in medicine have passed, and we are now working in the age when legitimate progress can only be made as a result of careful research and experimentation.—E. F. McCampbell, *Ohio Public Health Journal.*

Correspondence

Statistics of Automobile Accidents

To the Editor:—Would it not be possible for THE JOURNAL to get the facts in regard to automobile casualties in the United States? In view of the fact that your practical system of collecting and tabulating the accident results of the Fourth of July annual observation has aided forcibly in bringing about a change from a dangerous and destructive demonstration to one of sane and safe observance, might it not be possible to the same extent to make the use of the automobile safe and put a stop to the frequent deaths and injuries?

I am convinced that if the daily, or especially the annual loss of life could be ascertained and shown up in as conspicuous a manner as has been done in the Fourth of July casualties, the American people would be appalled.

The American public through its legislative bodies, the Interstate Commerce Commission and otherwise, has demanded that the railroads and other public service carriers adopt and use every device and plan for safety; and yet the private citizen, with no consideration of his own or other persons' safety, uses the automobile with its many horse-power engine in a most indifferent and reckless manner.

Many of these machines or cars are too often run by individuals of indifferent judgment or physical condition or by youths or others incompetent to insure the safety of their own lives or that of others traveling perhaps by safer methods.

If in every case the cause or influence leading to the accident, even in a large percentage of the occurrences, whether causing death or other injury, could be ascertained and shown in a lucid form, undoubtedly it would lead to better and safer conditions in handling these engine-driven vehicles. Laws and regulations could be urged and enforced, making this mode of travel practically one of safety.

If you can do this work you will confer on the traveling public a blessing and aid that will be inestimable.

JOHN J. COFFMAN, M.D., Scotland, Pa.

Etiology of Pellagra

To the Editor:—Your recent editorial on the report of the U. S. Public Health Service concerning pellagra (THE JOURNAL, Nov. 20, 1915, p. 1818) has been read with a great deal of interest, as it recalls to mind an article by Rosenbloom ("The Acetone Bodies in Diabetes Mellitus," THE JOURNAL, Nov. 13, 1915, p. 1715) which seems to have an important bearing on the subject.

Rosenbloom states that "in health the catabolism of large quantities of protein can dissipate acidosis on account of its partial conversion into sugar." I take it he means health as distinguished from the diabetic condition.

In the editorial on "Acidosis and the Reaction of the Blood" (Sept. 25, 1915, p. 1114) you state that metabolism in the animal body causes a regular formation of acid bodies which combine with the bases of protoplasm and blood, thus steadily operating to lower the alkaline reaction of the body.

This question now presents itself: Does not the protein diet which cures pellagra act by dissipating an acidosis (the particular acid bodies not differentiated yet), and may not this acidosis accumulate by *lack* of protein food?

What is acidosis? Is it not loss of reserve alkalinity sufficient to prevent neutralization of the acid bodies, as

stated in your September editorial? And if it be admitted, therefore, that deficient alkalinity causes acidosis, and acidosis is dissipated by protein diet, and pellagra is also dissipated by protein diet, may we not with reason propose that pellagra is a condition of deficient alkalinity or lowered alkaline equilibrium between bases and acids?

GEORGE D. FAIRBANKS, M.D., Brownsville, Texas.

Studies of Pellagra: a Correction

To the Editor:—I have just read the editorial on "Studies of Pellagra" (THE JOURNAL, Nov. 20, 1915, p. 1818). In the second paragraph of the first column I find the following: "As a result of epidemiologic studies, Goldberger had concluded in effect that pellagra is not a communicable disease, that it is dependent on some as yet undetermined fault in a diet in which the animal or leguminous vegetable component is disproportionately large," etc. This last word "large" is evidently a slip through inadvertence. It should be "small," so that the last part of the foregoing quotation should read, "that it is dependent on some as yet undetermined fault in a diet in which the animal or leguminous vegetable component is disproportionately small," etc.

JOSEPH GOLDBERGER, M.D., Washington, D. C.
Surgeon in Charge of Pellagra Investigations.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

UTILIZABLE ALCOHOL

To the Editor:—The amount of alcohol which can be oxidized by the adult human body in twenty-four hours, that is, serve as a food, has been determined by a physiologist and formulated into a law. Can you inform me concerning the name of the physiologist, and the amount of alcohol that can be utilized?

C. C. MECHLING, M.D., Pittsburgh.

ANSWER.—The maximal dose of alcohol has been estimated at 15 grams per day. Such an amount can be taken without causing the alcohol tension in the blood to become so high that more than the usual amount will be excreted in the kidneys and lungs. It has long been known that 90 per cent. of the alcohol ingested is burned in the body. Atwater and Benedict within the last few years have determined that as much as 99 per cent. of the alcohol ingested undergoes combustion in the organism when the amount of alcohol ingested per day is equal in quantity to that contained in 6 ounces of whisky. It is well known that alcohol tolerance depends largely on habituation of the individual to this substance. In other words, a greater combustion of alcohol occurs in the tissues of a steady drinker than in a habitual abstainer.

We are unable to find any reference to the formation of a law for the determination of alcohol utilized in the human body.

TESTS FOR ACETONE IN URINE

To the Editor:—Sajous quotes from THE JOURNAL regarding tests for acetone in the urine, those of Stock and Denigès. I have no description of these tests and would appreciate the information from you.

H. A. W. BROWN, Cookstown, Ont.

ANSWER.—These tests were described in an article by Dr. A. E. Taylor, "Tests for Acetone in the Urine" (THE JOURNAL, March 17, 1906, p. 790). The technic is as follows:

1. The Stock test: The distillate of the urine is used. From 50 to 100 c.c. of urine are made acid by the addition of either acetic, hydrochloric or sulphuric acid. The first 10 c.c. of distillate will contain all the possible acetone. About an inch of the distillate is placed in a test tube; a drop or two of a 10 per cent. solution of hydroxylamin hydrochlorid are added, and sufficient sodium hydroxid or carbonate to render the solution alkaline to liberate hydroxylamin; the mixture is shaken and a couple of drops of pyridin are added and the mixture shaken; then an inch of ether is added and the mixture shaken. Bromin water is then added drop by drop, with mixing until the ether layer becomes yellow; then a few drops of strong hydrogen peroxid are added; if acetone is present, the ether will turn a distinctive green blue.

2. The Denigès test: In the test of Denigès about an inch of the distillate in a test tube is mixed with an equal amount of a solution of the subsulphate of mercury (mercuric oxid 50, sulphuric acid 200, water up to 1,000) and the mixture allowed to simmer in a stoppered flask for about five minutes. A white crystalline precipitate occurs on cooling, which is very distinctive in appearance. If acetone is present in excess, the test is less distinct. If but a trace is present, a trace of sodium chlorid will aid the precipitation. The precipitate is not soluble in dilute hydrochloric acid.

CHOLOGESTIN AND TABLOGESTIN

To the Editor:—Are the enclosed claims of chologestin and tablogestin true? Or shall I try it myself? JAN CEPELKA, M.D., Chicago.

ANSWER.—The "enclosed claims" are the literature issued by F. H. Strong Company, New York, concerning chologestin and tablogestin. Chologestin is said to be a liquid of which 100 c.c. contains the amorphous sodium salt of glycocholic acid, 0.858 gm.; true sodium salicylate from the natural oil of wintergreen, 1.07 gm.; pancreatin, 2.15 gm., and sodium bicarbonate 2.15 gm., in a menstruum containing 15 per cent. alcohol. Each half ounce is said to contain the amorphous sodium salt of glycocholic acid, 2 grains; true sodium salicylate from the natural oil of wintergreen, 2½ grains; pancreatin, 5 grains, and sodium bicarbonate, 5 grains. According to the manufacturers, tablogestin is chologestin in tablet form, and three tablets of tablogestin are said to contain the active medicinal ingredients of 1 tablespoonful of chologestin. The statement is made:

"Tablogestin (and Chologestin), because of the combined digestive properties of the bile salt and pancreatin, materially aids in the intestinal digestion of the various foods and thus assists in the control of the fermentative and putrefactive changes that might otherwise ensue."

Bile salts do facilitate the action of the pancreatic juice in the intestines, but this applies only to bile salts of endogenous origin; that is, bile that is secreted in correlation with pancreatic secretion. It is doubtful if the pancreatin used in this mixture could ever enter into a digestion process in the intestine. As a consequence of the cholagogue action it might be admitted that it has an indirect influence on digestion in the intestine; this would, however, be offset by its disturbing influence on the digestive process in the stomach, as it is known that bile salts precipitate pepsin.

ARTICLES ON LEUKEMIA

To the Editor:—Please give me the more important references in the literature on leukemias in general, more particularly acute leukemia.

C. R. BIRD, M.D., Greensburg, Ind.

ANSWER.—The following is a partial list of articles published during the past two years:

Billings, F.: Benzol in Treatment of Leukemia, THE JOURNAL, Feb. 15, 1913, p. 495.

Warthin, A. S.: Minute Changes Produced in Leukemic Tissues by Exposure to Roentgen Rays, *Am. Jour. Med. Sc.*, January, 1914; abstr., THE JOURNAL, Jan. 31, 1914, p. 407.

Smith, F. H.: Benzol Treatment in Two Cases of Leukemia, THE JOURNAL, March 21, 1914, p. 921.

Non-Formation in Leukemia of Agglutinins for Typhoid Bacilli, Current Comment, THE JOURNAL, April 18, 1914, p. 1259.

Brown, E. J.: Acute Lymphatic Leukemia after Tetanus Serum Anaphylaxis, THE JOURNAL, May 9, 1914, p. 1473.

Pulawski, A.: Roentgen Rays and Benzol in Leukemia, *Wien. klin. Wchnschr.*, May 7, 1914; abstr., THE JOURNAL, June 13, 1914, p. 1935.

Sappington, S. W., and Pearson, W. A.: Leukemias Under Benzol, THE JOURNAL, July 11, 1914, p. 143.

Kiralyfi, G.: Intramuscular Injections of Blood in Treatment of Leukemia, *Wien. klin. Wchnschr.*, July 30, 1914; abstr., THE JOURNAL, Sept. 26, 1914, p. 1143.

Graham, C. F.: Case of Splenomyelogenous Leukemia Treated with Benzol, THE JOURNAL, Feb. 6, 1915, p. 505.

Simon, C. E., and Judd, C. C. W.: Acute Lymphatic Leukemia, THE JOURNAL, May 15, 1915, p. 1630.

Smith, F. H.: Benzol in Leukemia, THE JOURNAL, May 22, 1915, p. 1734.

Beifeld, A. F.: Case of Acute Myeloid Leukemia, *Arch. Diagnosis*, July, 1915.

Boardman, W. W.: Benzene Treatment of Leukemia, *California State Jour. Med.*, September, 1915.

Ireland, R. A., and Ruhrah, J.: A Case of Lymphatic Leukemia with Apparent Cure, THE JOURNAL, Sept. 11, 1915, p. 948.

Steinke, C. R.: Leukemia: Report of Two Cases, THE JOURNAL, Sept. 11, 1915, p. 954.

Leukemia, Therapeutics, THE JOURNAL, Oct. 9, 1915, p. 1280.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 11, 1916. Sec., Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, Jan. 4, 1916. Sec., Dr. Harry C. DeVighne, Juneau.

ARIZONA: Phoenix, Jan. 4-5, 1916. Sec., Dr. John Wix Thomas, National Bank of Arizona Bldg., Phoenix.

CALIFORNIA: Los Angeles, December 14, and Sacramento, Jan. 11, 1916. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

COLORADO: Denver, Jan. 4, 1916. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DELAWARE: Dover and Wilmington, December 14. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

DISTRICT OF COLUMBIA: Washington, Jan. 10, 1916. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

INDIANA: Indianapolis, Jan. 10, 1916. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.

MARYLAND: Regular, Baltimore, December 14. Sec., Dr. J. McP. Scott, Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

MINNESOTA: Minneapolis, Jan. 4-7, 1916. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, December 13-15. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

NEW HAMPSHIRE: Concord, December 20-21. Sec., Dr. W. T. Crosby, The Beacon, Manchester.

NEW MEXICO: Santa Fé, Jan. 10, 1916. Sec., Dr. W. E. Kaser, East Las Vegas.

NORTH DAKOTA: Grand Forks, Jan. 4-7, 1916. Sec., Dr. G. M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, Jan. 11-12, 1916. Sec., Dr. R. V. Smith, 502 Daniel Bldg., Tulsa.

OREGON: Portland, Jan. 4, 1916. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 18-20, 1916. Sec., Mr. Nathan C. Schaeffer, Harrisburg.

RHODE ISLAND: Providence, Jan. 6-7, 1916. Sec., Dr. Gardner T. Swarts, Providence.

SOUTH DAKOTA: Pierre, Jan. 11, 1916. Sec., Dr. P. B. Jenkins, Wanbay.

UTAH: Salt Lake City, Jan. 3, 1916. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

VIRGINIA: Richmond, December 14-17. Sec., Dr. J. N. Barney, Fredericksburg.

WASHINGTON: Walla Walla, Jan. 4, 1916. Sec., C. N. Suttner, Baker Bldg., Walla Walla.

WISCONSIN: Madison, Jan. 11, 1916. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

California June Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the written examination held at San Francisco, June 15-18, 1915. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 37, including 2 osteopaths, of whom 35 passed and 2 osteopaths failed. Seven candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Los Angeles		(1914)	81.6
Hahnemann Med. Coll. of the Pacific		(1915)	75.1, 82, 84.2, 86.5
Leland Stanford Junior University		(1915)	79.5, 81.4, 82.2, 82.3, 82.7, 83, 85.2, 88.1, 88.3, 90.9, 91.3, 91.5, 93.9.
Oakland College of Medicine and Surgery		(1915)	90
University of California		(1915)	84.7, 84.9, 88.2, 89.3, 90.7, 90.9, 92.8, 93.3, 93.4, 94.3, 94.8.
Denver and Gross College of Medicine		(1904)	90.1
Jenner Medical College		(1901)	83.8
Harvard University		(1915)	88.3
Jefferson Medical College		(1911)	81.8

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University	(1894)	(1899)	Minnesota
Rush Medical College	(1891)		Minnesota
State University of Iowa College of Medicine	(1898)		Minnesota
College of Phys. and Surgs., Kansas City, Kan.	(1898)		Missouri
University of Louisville	(1872)		Missouri
University of Michigan Medical School	(1891)		Minnesota

The following questions were asked:

PHYSIOLOGY

1. (*a*) Discuss hemolysis. (*b*) Discuss the origin and fate of the leukocytes. 2. What is the relation of the nerves to the movements of the intestines? 3. Discuss the influence of the nervous system on respiration. 4. Define the following terms: inhibition, diffusion, osmosis, diapedesis, perimetry. 5. Discuss the metabolism of the embryo. 6. Discuss color blindness. 7. Discuss inhibition in reflex action. 8. Discuss the relation of the rods and cones to vision. 9. Discuss the variations in the volume of the brain due to respiration. 10. Discuss the sensation of hunger and thirst. 11. (*a*) What are the sources of uric acid? (*b*) Where and how is uric acid formed? 12. What effects are observed after section of a cutaneous nerve?

OBSTETRICS AND GYNECOLOGY

1. What is a blue baby? Give pathology and treatment of the condition. 2. Ophthalmia neonatorum: Give etiology, pathology and treatment. 3. (*a*) What are the indications for the use of forceps? (*b*) for cesarean section? 4. Diagnose tubal pregnancy before rupture. 5. Describe the mechanism of labor with a left mento-anterior position. 6. Differentiate polyhydramnios from twin pregnancy. 7. Name the ligaments of the uterus and give the origin and insertion of each. 8. Define and give etiology and pathology of cystocele, rectocele, hematocele and procidentia. 9. Describe an operation for complete laceration of the perineum. 10. Give diagnosis and treatment of pelvic abscess. 11. Give cause, symptoms and treatment of subinvolution of the uterus. 12. Erosion of the cervix: Give cause and treatment.

GENERAL MEDICINE

1. Typhoid fever: (*a*) etiology; (*b*) symptomatology; (*c*) pathology; (*d*) diagnosis. 2. In a case of general anasarca, how would you proceed to determine the underlying cause. 3. What are the early signs of tuberculosis, both subjective and objective? (*b*) Describe two important tests for tuberculosis and give relative value. 4. (*a*) Differentiate acute cerebrospinal meningitis and acute anterior poliomyelitis. (*b*) Give treatment of the latter. 5. (*a*) Describe and give management of a case of persistent gastro-enteritis in an infant on artificial diet. 6. Give ten causes of headache, and indicate location of pain in each variety. 7. Give a brief discussion of epilepsy, and give general advice to such patient. 8. What is the significance of a blood pressure of 240 in a woman 60 years of age? 9. Give symptoms and treatment of chlorosis. 10. Discuss the various types of asthma from etiologic standpoint, and give general management of one type. 11. Discuss the complications and sequelæ of scarlet fever. 12. What is the usual type of pneumonia in the child; in the adult; in the aged? (*b*) Give description and treatment of one type of pneumonia.

ANATOMY AND HISTOLOGY

1. Give formation and branches of the lumbar and sacral plexuses. (May use diagram.) 2. (*a*) Classify articulations; give a typical example of each class. (*b*) Discuss the hip joint, naming all muscles passing across the joint. 3. Discuss the distribution and central connections of the auditory (eighth cranial) nerve. 4. Discuss the bony thorax. 5. Discuss the pleura, giving attachments and reflections, also external markings of its boundaries. 6. Give the action of: (*a*) the sternocleidomastoid, singly and together; (*b*) the psoas magnus; (*c*) serratus anterior; (*d*) deltoid; (*e*) trapezius; (*f*) iliocostalis; (*g*) latissimus dorsi. 7. Describe by diagram the longitudinal section of the femur, showing outline and histologic structure showing normal development and regeneration. 8. Give the essential differences of the appearance and structure—gross and microscopic—of the mucous membrane of the duodenum, jejunum and ileum. 9. Give the histology of a medium size artery. 10. Give formation of the tributaries of the portal vein; give most inferior tributary. 11. Discuss the cervical sympathetic ganglia; give location, tributaries and branches. 12. Give histology of the mammary gland; make drawing showing typical histologic section.

HYGIENE AND SANITATION

1. Indicate the limitations of private practice as compared with public health practice. 2. (*a*) What are the most important foreign ingredients in water? (*b*) Mention five methods of purifying water. 3. (*a*) What prevalent acquired defect in schoolchildren's eyes is directly due to school life? (*b*) Discuss the prophylaxis of eye defects. 4. Why should the registration of vital statistics be compulsory? 5. In what ways are health and efficiency of schoolchildren prompted by frequent physical examinations? 6. Describe the modern method of dealing with an epidemic of diphtheria among schoolchildren. 7. What diseases are transmitted by animals and insects? 8. Discuss antityphoid inoculation. 9. Name ten preventable diseases and indicate the mode of prevention. 10. Discuss modes of dissemination of diseases which can be transmitted by indirect contact. 11. Discuss the efficiency of formaldehyd as a disinfectant. Describe most efficient method of using it. 12. Describe an efficient method of disinfecting excreta.

SURGERY

1. (*a*) What conditions will cause bleeding from the stomach? (*b*) State briefly etiology, symptomatology, clinical and laboratory findings, and prognosis of gastric ulcer. 2. What symptoms and signs would result from fracture of the skull over the right rolandic area? 3. State briefly the general considerations in the treatment of gunshot wounds. 4. (*a*) Name the different varieties of goiter. (*b*) When is removal of the thyroid gland indicated? (*c*) When is the ligation operation indicated? (*d*) When is no surgical interference indicated? 5. (*a*) Diagnose posterior dislocation of hip. (*b*) Describe briefly the necessary manipulations to reduce said dislocation. What is the after-treatment? 6. Describe the operation and name structures encountered in ligation of the superficial femoral artery at the apex of Scarpa's triangle. 7. (*a*) Describe the operation of removal of the appendix. (*b*) What are the indications for said operation? 8. (*a*) Describe the symptoms and signs of oblique fracture of head of humerus. (*b*) Describe briefly the treatment. 9. Describe briefly a typical case of acute empyema, giving all aids to diagnosis of said condition. 10. Give the diagnosis, course and prognosis of cancer of the rectum. 11. Describe the treatment of acute gonorrhea in the male. 12. Differentiate gallstones from right-sided kidney stones.

CHEMISTRY AND TOXICOLOGY

1. Name and give the formulas for five salts of mercury. 2. What is the formula of hydrogen peroxid? What is its action on silver oxid; on finely divided platinum? 3. What is "bleaching powder"; its formula? How does it act as a disinfectant? 4. Define and discuss diffusion and osmosis. 5. Describe and discuss briefly HNO_3; its

chemical and physical properties. 6. Discuss arsenic (its occurrence, properties and toxic effects, and describe the use of one antidote). 7. Discuss lead poisoning and two effective means of overcoming the same. 8. Define "physiologic antidote" and "chemical antidote" and give an example of each. 9. Discuss hydrargyrism. 10. Discuss the indications and contraindications for the use of stomach pump. 11. Discuss carbolic acid poisoning and an efficient method of treatment. 12. Discuss the toxic effects of yellow phosphorus.

BACTERIOLOGY AND PATHOLOGY

1. What changes are found in a stained blood smear in primary pernicious anemia? 2. What elements might you find microscopically in the sediment of a normal urine? 3. Describe the microscopic field seen in: (*a*) a negative Widal reaction; (*b*) a positive Widal reaction. 4. What do you look for in a microscopic examination of stomach contents? 5. Define eosinophilia; name several conditions. 6. What are casts? Describe at least three varieties, and tell under what diseased conditions they are found. 7. Discuss briefly the etiology of chronic interstitial hepatitis, or cirrhosis of the liver, and describe the microscopic appearance of at least two varieties. 8. Describe embolism, infarction and thrombosis, and briefly discuss the pathology of each. 9. Define: (*a*) carcinoma; (*b*) sarcoma. Give the relative frequency of occurrence in the: (*a*) breast; (*b*) liver; (*c*) bone. 10. Describe the gross appearance of a bone at the site of osteomyelitis. 11. What are the causes of jaundice and how do *they* operate to produce this condition? 12. Define: (*a*) cloudy swelling; (*b*) atrophy; (*c*) malignancy.

MATERIA MEDICA AND THERAPEUTICS, PHARMACOLOGY, INCLUDING PRESCRIPTION WRITING

1. Name four commonly used mercury compounds (U. S. P.) and discuss briefly their therapeutic uses. 2. Discuss fully the possible therapeutic effects that would be expected of the following prescription: ℞ Tinct. nucis vomicae, 5.0; fluidextracti cascarae, 10.0; tinct. cardamon comp., 25.0; tinct. gentian comp., q.s.ad. 100.0. M. Sig.: Take one teaspoonful in half glass of water t. i. d., before meals. 3. What is apomorphin? State dosage, indications, modes of administration and action. 4. Discuss the indications and contraindications for the use of the following: ℞ Kalii iodidi, 18.0; aquae dest., 60.0; syrup sarsaparilla comp., q.s.ad. 125.0. M. Sig.: Take one teaspoonful, well diluted, t. i. d., p. c. 5. Describe and discuss three different modes of administering drugs for therapeutic purposes. 6. Discuss the conditions that modify the effects of drugs. 7. (*a*) Discuss the dosage of drugs as influenced by age, sex, size and weight of the individual. (*b*) Define idiosyncrasy and discuss one example. 8. (*a*) Discuss oleum ricini, its dosage, therapeutic action and indications. (*b*) Discuss three contraindications for the use of intestinal evacuants. 9. Discuss the systemic action of alcohol (internally administered.) 10. What is epinephrin? How is it administered? What are its principal effects? 11. Discuss salvarsan (its principal properties, dosage, best mode of administration, indications and contraindications.) 12. Describe the bromid salt most commonly used (as to its physical properties, dosage, therapeutic action and untoward effects).

Indiana July Report

Dr. W. T. Gott, secretary of the Indiana State Board of Medical Registration and Examination, reports the written examination held at Indianapolis, July 13-15, 1915. The total number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 43, of whom 40 passed, including 2 osteopaths, and 3 failed. Twenty-seven candidates were licensed through reciprocity. The following colleges were represented.

College	PASSED	Year Grad.	Per Cent
Howard University		(1914)	89.8
Dunham Medical College		(1902)	81.8
Northwestern University		(1915)	90.9
Rush Medical College		(1915)	89.3
Indiana University		(1915)	82.6, 82.6, 85, 85.6, 86.3, 86.4, 86.5, 87.1, 87.3, 87.3, 87.5, 87.5, 87.6, 87.7, 87.9, 88.1, 89, 89.3, 90.3, 90.4, 90.5, 92.7, 92.8, 93.7, 94.1, 94.7.
University of Louisville		(1915)	83.9, 84.7, 84.7, 87.6
Harvard University		(1915)	89.8
University of Michigan Medical School		(1915)	93.1
Western Reserve University		(1915)	91.6
Jefferson Medical College		(1912)	89.4
	FAILED		
University of Illinois		(1915)	*
University of Toronto		(1906)	87.5†
National School of Medicine, Mexico		(1912)	73.2

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Chicago		(1912)	Illinois
Chicago College of Med. and Surg.		(1910) (1913, 2)	Illinois
Hahnemann Med. Coll. and Hosp., Chicago		(1901) (1910)	Illinois
Northwestern University		(1901)	Illinois
Rush Medical College		(1912)	Illinois
University of Illinois		(1913, 2)	Illinois, Missouri
University of Louisville		(1894) (1914)	Kentucky; Michigan
Johns Hopkins University		(1902)	Maryland
University of Maryland		(1912)	Maryland
Harvard University		(1893)	Nebraska
Detroit College of Medicine and Surgery		(1914)	Michigan
University of Michigan Medical School		(1902)	New York
Missouri Medical College		(1887)	Missouri
St. Louis University		(1913)	Missouri
University Medical College, Kansas City		(1911)	Missouri
Medical College of Ohio		(1875)	Ohio
Ohio State University, College of Medicine		(1914)	Ohio
Western Reserve University		(1911)	Ohio
Medico-Chirurgical College of Philadelphia		(1913)	Penna.
Western Pennsylvania Medical College		(1897)	Penna.
Meharry Medical College		(1906)	Tennessee

* Examination incomplete.

† Fell below the required average in one subject.

Book Notices

DISEASES OF NUTRITION AND INFANT FEEDING. By John Lovett Morse, A.M., M.D., Professor of Pediatrics, Harvard Medical School, and Fritz B. Talbot, A.B., M.D., Instructor in Pediatrics, Harvard Medical School. Cloth. Price, $2.50. Pp. 346. New York: The Macmillan Company, 1915.

The first part of this book contains chapters on the physiology of digestion, and the metabolism of the various food elements—the fundamentals, the proper foundation and introduction to the main part of the work, which is a clinical and practical discussion of infant feeding.

The laboratory worker will find in the early chapters a résumé of the latest views on the metabolism of early life with full reference to the work which has been done in this direction. That work has been carefully sifted, and critically analyzed. It is refreshing to come across such a sentence as this: "It seems wise to summarize what we *think* we know about the digestion and absorption of fat." This candor and frank acknowledgment of our limitations is characteristic of the book: repeatedly one reads, "but this is not proved," following the statement or description of a well-established clinical observation.

Pediatricians and general practitioners will find in the work much of practical value, much knowledge and detailed information which they can apply in their everyday practice. Breast feeding and artificial feeding are carefully discussed and many valuable hints given as to the management of difficult cases, the ideas set forth being in the main rational and common sense, yet "scientific" in that they are based on, and are the logical outgrowth of, facts in metabolism stated in the earlier chapters of the book. This correlation or "team play" between the different parts of the work, again, is one of its characteristics.

The subject of breast feeding receives the attention which its importance demands, fifty-five of the 336 pages being devoted to it. Directions as to the management both of the baby and the mother's diet and daily hygiene are given in detail. The more complicated subject of artificial feeding is next taken up and, cow's milk being the basis of all substitute foods, discussion of its qualities and characteristics forms the introduction to this general subject. A helpful and practical part in this discussion is a description of certified milk, with detailed directions as to the management of a dairy aiming to produce certified or clean milk.

The opening paragraph of the chapter on general principles of artificial feeding strikes the keynote of the authors' views on the feeding of babies:

> "In approaching the subject of artificial feeding it must be remembered that there are only a few food elements. A baby's food may contain all of these elements, it must contain some of them, it cannot contain any other elements. These food elements are carbohydrates, protein and salts. The carbohydrates comprise the sugars and starches."

The authors are careful to point out that expression of amounts in percentages is a method of calculation and not a method of feeding, and insist on the necessity of accuracy in our knowledge of what we are feeding our babies. The misconceptions and erroneous ideas concerning this method of calculation are cleared away, and its ease and simplicity are clearly evident on study of this particular part of the book. The absence of complicated algebraic formulas is refreshing. The method of calculating the caloric value of the baby's twenty-four-hour amount of food is also given its just weight and importance. It would have been simpler, however, had the authors used the metric system throughout

in these calculations. They do use it in estimating the caloric needs of premature infants; why not of older babies also?

The chapters on the problems of infant feeding will be found invaluable to those conscientious physicians who wish to practice careful and efficient methods of feeding, to know what they are doing and thereby to save life.

As is to be expected in such a book of today, in the treatment of the digestive disturbances of infancy, stress is laid almost exclusively on the diet, medicine playing but little part in their proper management.

While this work is by no means perfect, it is one of the best and most complete expositions of the difficult subject of infant feeding which have yet been contributed to medical literature in any language. It is no exaggeration to say that, if the principles as expressed in this book would be taken to heart by the great body of general practitioners to whose hands after all is entrusted the feeding of the vast majority of the nation's babies, and applied diligently, intelligently and conscientiously by them to the management of the most helpless of their patients, the shamefully high infant mortality which characterizes our own as well as other countries would be materially diminished. That, after all, is, the object of all such work in our profession, the saving of life.

THE PRACTITIONER'S VISITING-LIST, 1916. Leather. Price, $1.25 net. Philadelphia: Lea & Febiger, 1915.

THE MEDICAL RECORD VISITING-LIST OR PHYSICIAN'S DIARY FOR 1916. Leather. Price, $1.50. New York: William Wood & Co., 1915.

THE PHYSICIAN'S VISITING-LIST (Lindsay and Blakiston's) for 1916. Sixty-Fifth Year of Publication. Leather. Price, $1.25. Philadelphia: P. Blakiston's Son & Co., 1915.

Among the various books peculiar to the holiday season are the annual visiting and record lists. These have been offered to physicians over a sufficiently long period for their make-up to have assumed a standard form. They vary, however, in the arrangement of the pages and in the subsidiary contents.

In the "Practitioner's Visiting List" are information on the periods of dentition, directions for estimating the day of confinement, tables and comparative scales of weights and measures, an article on the examination of the urine, a list of incompatibles, an article on artificial respiration, tables of eruptive fevers, of poisons and antidotes, of dosages and of therapeutic reminders, and an article on the ligations of arteries. The book, which is for thirty patients per week, contains 192 pages, which are numbered, and a table of contents. It is attractively bound in red leather. Separate departments are devoted to general memoranda, obstetric engagements, vaccinations, death registry, addresses of patients and nurses, and a cash account. The book has a pocket for notes, and a place for the insertion of a pencil.

In the "Medical Record Visiting List" are a table of approximate equivalents, an obstetric calendar, tables of weights and measures, of dosage, and of drops and solutions for subcutaneous injections, a few short miscellaneous facts, a table of poisons and antidotes; miscellaneous emergency treatments, articles on artificial respiration and signs of death, and hints on the writing of wills. The book, which is marked for sixty patients, has approximately 150 pages, with separate departments devoted to the daily record, special memoranda, consultations, obstetric practice, vaccinations, deaths, addresses of nurses and patients, and cash account. The book is attractively bound in black leather, and contains a pocket for notes, and a pencil.

In the "Physician's Visiting List" are a table for calculating the day of confinement, a table of contents, a table of incompatibilities, poisons and their antidotes, an article on the metric system, a table for converting apothecaries' weights and measures into metric, a table of doses and of quarantine periods in infectious diseases, an article on asphyxia, and a comparison of thermometric scales. The record pages are not numbered. The book, which is marked for twenty-five patients, contains approximately 100 pages, and is attractively bound in smooth black leather, with a well-fitting leather flap. It has a pocket for notes and a pencil.

From this résumé of contents, the relative advantages of the various lists may be estimated.

Miscellany

Pulmonary Diseases Among Miners

There has been apparently an unusual prevalence of pulmonary tuberculosis and a high death rate from it among the metal miners in southwestern Missouri. This condition has attracted considerable attention and has caused some alarm in that part of the country. To determine the facts in relation to this condition, the U. S. Bureau of Mines instituted an investigation of pulmonary diseases among miners in the Joplin district and its relation to rock dust in the mines.

In Technical Paper 105, A. J. Lanza and Edwin Higgins make a preliminary report of their investigations. The general opinion in this region was that lung diseases became more prevalent after the beginning of active mining in what is known as the sheet ground mines, and that the flint dust from drilling and other mine operations was directly responsible.

The records of the State Board of Health of Missouri for 1912 show 180 deaths from pulmonary tuberculosis in Jasper County, where these metal mines are located. From the Jasper County Antituberculosis Society records, however, it was learned that during the same year there were 720 deaths among miners who had worked two or more years underground. Not more than twelve of these deaths were from pneumonia, which was in some cases a terminal infection of tuberculous subjects. Not all of these deaths occurred in Jasper County, however, but some occurred in adjoining counties in Missouri and others in Kansas. This accounts for a considerable difference between the figures of the state board of health and those of the antituberculosis society.

Some interesting comparative figures are brought out with reference to the death rate in the metal mining counties and in other counties and cities in Missouri. The death rate in 1911 from pulmonary tuberculosis in Jasper County, where the zinc mines are located, was 14.08 per cent. of the total deaths; in 1912, 15.1 per cent.; in 1913, 15.5 per cent. In St. Francois County, which is the lead mining district, the percentage for 1911 was 11.8; 1912, 11.6; 1913, 13.1. In Greene County, which includes Springfield, in Jackson County, which includes Kansas City, and in St. Louis, not mining districts, the percentages for 1911 were, respectively, 9.27, 9.33 and 8.75. In 1912 in the same counties and cities the percentages were: 9.46, 9.07 and 8.93, and for 1913 the figures were 7.4, 8.8 and 9.1. It will be seen that in the two metal mining counties the deaths from tuberculosis exceeded those in the other counties and cities by considerable percentages.

These figures have been taken into consideration by industrial insurance companies doing business in the metal mining counties. One company required that all applicants for industrial insurance over 10 years of age must be examined as for ordinary insurance. This rule is in operation in only one or two other districts, and is said to be occasioned by the number of death claims on account of pulmonary tuberculosis. Another industrial insurance company doing a large business among miners and their families estimates that at least 90 per cent. of rejections and 75 per cent. of death claims are due to pulmonary tuberculosis.

In determining the effect of mining conditions in producing this higher death rate, the investigators studied the methods of mining with reference to drilling, blasting, shoveling, housing, ventilation, temperature, mine water and rock dust, besides some other collateral subjects with reference to the personal hygiene and personal habits of the miners.

Although the mine operators have succeeded for the past two years in making many substantial improvements in working conditions underground, and state mine inspectors have given the subject attention, there is still room for improvement in the working conditions of the mines which the investigators believe to be the chief source of the lowered state of health which results in the large incidence of tuberculosis. Rock dust is the chief vehicle of harm, done directly to the lungs by reason of the hard, sharp, comparatively large flinty

particles of which it is composed. This dust is made by the drilling and blowing out of dry holes, by "squibbing," which means the blasting in holes in which the drill becomes blocked, and by the blasting of large boulders in the chambers of the mine, as well as from shoveling and dumping the ore.

The mine workings in sheet ground mines constitute practically one large open chamber which allows the dust to disseminate. Although the amount of dust in the air is not, comparatively, large, practically every man underground is exposed to the dusty atmosphere during his entire shift. This dust, it is believed, could be largely prevented, and two methods are mentioned: the use of some type of drill that provides for water passing through the core of the drill steel into the drill hole, and the spraying of the drill holes, ore faces and broken rock by means of a hose to which a nozzle is attached. A separate water line should be laid to every working face. None of the mines are yet fully equipped with water drills. Strict rules should be enforced against squibbing and boulder blowing while the shift is underground, and against the blowing of drill holes at all times. Ventilation should be improved by the opening of new shafts whenever practicable. By way of legislative provisions it is recommended that state mine inspectors should be empowered to decide what constitutes a dusty mine, and that operators should be compelled to run a water line to each working face. Every miner should be compelled to use the water. Breaking boulders by means of powder or dynamite should be prohibited, except when the shift has left the mine. Blowing of drill holes without first wetting them should also be prohibited.

It is believed, further, that a workman's compensation act would go far toward improving safety and sanitary conditions in the mines of the Joplin district.

The Larger Relations of the Hospital

The final test of a hospital's efficiency, according to R. M. Bradley (*Modern Hospital*), is not merely the treatment which it accords to the patients which it receives, but also the impression which it makes on the whole sum of sickness in the community. He summarizes the results of a canvass of two districts in New York, with a view to ascertaining this point.

It appeared that, in a total population of 17,000, 86.6 per cent. of the cases of sickness were cared for at home and not at the hospital, and that 75 per cent. of the typhoid deaths and 80 per cent. of the pneumonia deaths occurred at the home. Why were these desperate cases not cared for by the hospital? Another canvass to ascertain the hospital needs was made of all ascertainable cases of sickness in a central New York district with about 10,000 inhabitants. The number of beds needed was figured out; but analysis of the causes of illness sadly disarranged the beautiful estimate. For instance, the figures called for accommodations for many typhoid patients; but reflection suggested a few drainpipes as "a more radical and less expensive remedy for that particular ill." Certain unfortunate girls had no place where they could receive proper care during confinement; but would it not be better to place such helpless and feebleminded creatures under permanent custody than to aid them in producing offspring like themselves? The dwellings of many families were no better as places to live in than to be sick or die in. "Was the remedy better housing or more hospital beds?"

Bradley suggests that in future hospital planning will be carried out in connection with a social survey that will take account of the main sources of preventable illness. While, on the one hand, hospital provision must tend to increase as the people learn reliance on hospitals in proper cases, on the other hand it should tend to decrease with the application of methods of disease prevention and a system of home care that will prevent hospitals from being overloaded with the less urgent cases. Bradley indicates a method of tabulation intended to bring out how far the hospital is meeting the demands of the highest social efficiency. For such a purpose cases might be classified as (1) real hospital cases (cases in which the patients cannot without undue trouble and expense or danger to the community be cared for outside of the hospital); (2) cases in which home care or nursing is defective, and (3) cases in which the patient has no home. He also suggests that account be taken of the days during which convalescent patients have to be retained in hospital (thus crowding out more urgent cases) because there is no suitable place for them elsewhere. A system is needed which will coordinate the hospital with other social agencies.

Medicolegal

Liability of Associate Surgeon for Leaving of Sponge in Wound

(*Walker vs. Holbrook* (*Minn.*), *153 N. W. R. 305*)

The Supreme Court of Minnesota affirms a judgment for $1,000 damages against the defendant for alleged malpractice in the leaving of a piece of gauze or sponge in the body of the plaintiff in an operation for appendicitis and other troubles. The court says that one of the incisions never healed, but the presence of foreign matter, though the wound was inspected, was not demonstrated until parts of the gauze began to come from the wound. It was in the plaintiff's body nearly a year. The first contention of the defendant was that there was no contractual relation between him and the plaintiff; and the evidence relating to his employment was somewhat unsatisfactory. It was, however, sufficient to present the issue to the jury which could properly find that the defendant was employed by the other surgeon acting on the suggestion of the plaintiff. If this was true, he owed the plaintiff the duty of exercising reasonable care and skill, and the question as to whether or not he performed that duty was for the jury. The defendant's second contention was that he was not in charge of the operation, but was merely an assistant of the other or operating surgeon, and merely did the things which he was told to do, and that consequently the negligence or want of care, if any, was that of the other surgeon, who had died. The evidence was conflicting as to whether or not the defendant was employed by the other surgeon on his own motion or at the suggestion of the plaintiff. Whether or not the defendant was merely an assistant to the other surgeon, employed by him on his own initiative, doing the things that he was told to do, so as to free him from any charge of negligence, was, under the evidence, a question for the jury. There was evidence tending to show that the defendant actively participated in the operation, that he consulted with the operating surgeon, that he assisted in sewing up the wounds, and that he handled the instruments and did other things, from which, if the jury believed the testimony, they could find that he was performing the operation jointly with the other surgeon. The theory on which the action was tried and submitted to the jury was that the plaintiff was injured by the failure of the defendant to exercise reasonable care and skill, a duty resting on the defendant under the circumstances. The trial court properly submitted the case on this theory. The defendant, whether at the invitation of the plaintiff or of the other surgeon, associated himself with the latter and took an active part in the operation. In thus undertaking to act, he owed to the plaintiff the duty of performing the operation with the reasonable care and skill which ordinary surgeons use under such circumstances. It was not charged that there was any lack of skill. The evidence all pointed to want of care. The law requires reasonable care. But this care must be proportionate to the risks to be apprehended and guarded against. The degree of care must be commensurate with the circumstances under which the transaction is had, the seriousness of the undertaking, and the dangers to be anticipated. Reasonable care may thus under certain circumstances be the highest degree of care. A third contention of the defendant was that a certain custom obtained in the hospital where this operation was performed, and that the

defendant and the other surgeon conformed to that custom, and to the practice and custom of reasonably skilled and careful operating surgeons at the time that the operation was performed. Evidence that the defendant followed the usual practice of surgeons in leaving the care of the sponges to the nurses, and that such was the general practice among good surgeons up to the period when the operation was performed, and that good surgeons at the time of the trial still followed that custom, was proper under the circumstances, but not conclusive on the court or the jury. General custom is not as a matter of law due care.

Validity of Statute Prohibiting Advertising to Cure Sexual Diseases—Sufficient Indictment

(*State vs. Hollinshead* (Ore.), *151 Pac. R. 710*)

The Supreme Court of Oregon affirms a judgment of conviction of the defendant of having violated section 2095 of Lord's Oregon Laws, as amended in 1913, by advertising a certain proprietary remedy, guaranteed to cure gonorrhea or gleet. The court says that the indictment very clearly and specifically stated that the defendant violated the law "by then and there exposing and exhibiting to the view of a large number of persons, and displaying and publishing, in the aforesaid county and state, a certain advertisement, to wit, a sign, in words and figures as follows, to wit," and then set out in full the objectionable matter. This was clearly sufficient, although the defendant contended that the indictment did not contain a statement of the facts constituting the offense with sufficient clearness and distinctness to notify him specifically of the offense for which he was to be tried.

But the chief contention of the defendant was more serious, being the assertion that the statute on which the prosecution was based is unconstitutional and void. It was contended that the act is defective, in that the subject thereof is not fairly expressed in the title, and that the act embraces more than one subject. The title of the original statute as enacted in 1909 reads thus: "An act to prohibit the advertising of treatment or cure of venereal or other diseases, declaring the same a misdemeanor and prescribing a penalty therefor." The court thinks it will be conceded without argument that this title fully covers the scope of the act itself. The title of the amendment reads thus: "An act to amend section 2095, Lord's Oregon Laws, relating to advertising to cure sexual diseases." In the New Standard Dictionary the word "sexual" is given as synonymous with "venereal," and is so accepted in common usage. It follows that this contention of the defendant must fail.

The next point presented was that the act is unconstitutional and void in that it is class legislation, and is a violation of the constitutional guaranty of equal protection of the law. This may well be considered in connection with the final proposition that the act is void because it is not within the legitimate scope of the police power of the state and is a violation of the constitutional provision that no person shall be deprived of life, liberty, or property without due process of law. For many years it has been recognized by publicists and legislators that some drastic action is necessary to check certain social evils and to protect youthful and inexperienced humanity, not only from easy access to vicious and immoral practices, but also from the schemes of designing men, who, for the sake of financial profit, would prey on the calamities of the unfortunates who have sowed the wind and reaped the whirlwind. Further than this, it has been thought that the act of spreading broadcast, by means of advertising, the idea that certain venereal diseases are easily and cheaply cured, is against public policy, in that it has a decided tendency to minimize unduly the disastrous consequences of indulging in dissolute action. These views were evidently the moving principle of the legislators in the passage of the act under discussion. The purpose of the act is clearly in the interest of the public morals. It is not class legislation, for it applies to all who may be engaged in a like business.

The court regards the statute as a valid exercise of the police power of the state.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Southern Surgical and Gynecological Association, Cincinnati, Dec. 14-16.
Western Surgical Association, Des Moines, Iowa, Dec. 17-18.

PHILADELPHIA COUNTY MEDICAL SOCIETY

Meeting held Oct. 13, 1915

The President, DR. EDWARD E. MONTGOMERY, in the Chair

SERUMS AND VACCINES

General Principles of Vaccine and Serum Therapy

DR. THOMAS MCCRAE: Two factors obtain in an attack of an infectious disease—the virulence of the infecting organism and the resistance of the individual. Each may vary, and the possibilities for differences are endless. The contest between the infecting organism and the individual attacked gives the features of the disease. Recovery from the attack means immunity; in some cases permanent; in others, temporary. The toxins can harm only when they unite with the cells; free in the blood they have no power to do harm. The toxin may unite with the cell and kill it, or it may unite and do little damage. This contest between the infecting agent and the body cells is an exceedingly specific matter. On this rests much of the principle of vaccine therapy. For example, take the number of strains of the pneumococcus. Infectious organisms find only a limited opportunity for development in the body, and in the majority of instances they are destroyed. The fact that many of the tissues of the body possess an immunity makes vaccine therapy possible. We speak of immunity under the two main heads of active and passive. The active is that in which the body manufactures its own protective substance; the passive, that in which the protective substance is introduced from without. In therapy we have the same division, active and passive immunization. The former is by vaccine, the latter by serum. The underlying principle in active immunization is by the use of vaccines to help the organism to produce the protective substance. The dose of vaccine must be such that the patient can overcome it by his own resistance, which is a difficult thing to estimate. In the use of vaccines it is advisable to make a strong distinction between acute and chronic infections. In the chronic form there is not the same danger as in the acute; the body has become more accustomed to the organism, and dangerous reactions are not so probable. In very acute cases we should keep in mind the danger if the infection is very severe and the body resistance low. In estimating the results of vaccine therapy, it should be remembered that in the majority of cases the body itself is well able to take care of the infection.

It is dangerous to draw conclusions from the results of vaccine therapy in a limited number of cases. As a general rule we are considerably safer in giving vaccine subcutaneously than intravenously. Small doses are to be employed at first. In the production of passive immunization we are introducing help from without. This is most useful in acute infections, and as with vaccines, the serum must be specific to give the best results. It should be given as a rule in large doses. The method of administration should be considered; whether this shall be subcutaneous, intramuscular, subdural or intravenous depends on conditions. There is not the same danger of doing harm as with the vaccines. In some instances we combine the two methods. In reference to the whole subject, we may say that we are dealing with very delicate reactions: how delicate it is often impossible to know. Caution is necessary, particularly in acute infections. The reactions are extremely specific; therefore, we must have specific knowledge and specific remedies before we can interfere successfully. In talking about the principles of vaccine therapy, we must not forget that perhaps the greatest principle of therapy is to be certain that our reme-

dies will do no harm. Therefore, in regard to the use of vaccine, especially, let us always have a clear understanding of what we are doing, we agents with intelligence, and above all, be sure that we are not doing injury instead of good.

Vaccine and Serum Therapy of Local and General Infections

Dr. Alfred Stengel: No one can properly approach a discussion of vaccine and serum therapy without giving some sort of expression to his views regarding the general principles on which such treatment is based, and the extent to which his practice would be governed by the scientifically demonstrated principles that are applicable. In February, 1914, in a discussion before the Royal College of Physicians in London, Dr. Rolleston said he would divide the opinions regarding vaccine therapy into three groups: 1. The optimistic, held by those who, while under the fascination of a new conception of a really rational treatment, have seen successful cures. This attitude is usually modified in time. 2. The pessimistic, more often expressed in private than in print, according to which vaccines never do good, and owe their apparent use to coincidence or suggestion. 3. The doubtful or open minded. Rolleston said that he belonged to the last class. I, myself, claim to belong to the first, freely confessing that the fascination of theories supported by some demonstration in experimental investigations quite carried me away. I am not quite certain that I fulfil Rolleston's idea of the latter part of the characterization of Group 1 because I am not conscious of having had my views modified. Like others who have made trial of these methods of treatment, I have sometimes seen brilliant results, and again, have failed to find them in cases apparently entirely similar, which may indicate that we have much to learn regarding practical details. There are many reasons, however, why I feel that an attitude of conservatism should be held on the matter of vaccine and serum therapy, and I cannot but recall the contrast between the attitude of the profession toward antidiphtheritic serum and that now exhibited toward vaccines, all sorts of serum and similar preparations. Whereas antidiphtheritic serum, whose claims to recognition were founded on the most rigidly scientific demonstrations, was received with scant courtesy and even denied for a considerable period of time, the professional attitude at present is to receive with open arms any and all sorts of vaccine and serum treatments resting on no sort of foundation, or on the flimsiest evidence. Sometimes it has been said that progress in drug therapeutics has been largely based on experiment in man, and that serum and vaccine therapy should be advanced by the same method. There is a fundamental difference, however, in these two methods of treatment. So long as the gastro-intestinal tract is functionally intact, the administration of any nontoxic drug is a matter of little moment, and even toxic drugs in sublethal doses may be tolerated, or if irritating, rejected. The subcutaneous or intravenous injection of vaccines or serums is, however, an entirely different matter, and we should not forget the distinction. Another reason for conservatism is that vaccines and serums are distinctly capable of doing harm. It is often said that in serious diseases such treatment may as well be tried because it can do no harm. This statement is grossly incorrect. On the contrary, I could easily produce evidence that both vaccines and serums are capable of causing injurious effects. I do not wish to be misunderstood in offering these reasons for a more conservative attitude toward this whole question. No one who has read the medical journals or the newspapers need be apprehensive that vaccines and serums will fail to receive a fair trial, but there is grave reason to suspect that they will be abused.

Dangers and Futility of the Indiscriminate Use of Serums and Vaccines

Dr. M. Howard Fussell: A serum is specific only against the toxin generated by the organism used in the preparation of the serum. A vaccine will generate immune bodies only against the organism from which the vaccine is made. Failure to grasp these facts is perhaps responsible for the greater part of the indiscriminate use of vaccines and serum. Unfortunately, many practitioners base their belief in the value of vaccines and serums on the statements of manufacturing firms and their detail agents. Many manufacturing firms have distributed to the medical men brochures containing statements, some of which are true and others half true and misleading. It is questionable whether general infections are favorably affected by vaccines. Successfully to treat general or local infection with serum or vaccine we must use the serum or vaccine made from the causative organism. To use any stock vaccine with propriety, one made from the type of organism to which the infection is due is essential. A mixed or combined vaccine is composed of entirely unrelated organisms, not different strains of the same, and it is certainly carrying the use of shotgun prescriptions to a wide range to give organisms of entirely different characteristics. Such treatment is futile and may easily be dangerous. Phylacogens, according to their manufacturers, are neither serums nor vaccines, but "sterile aqueous solutions of metabolic substances or derivatives generated by bacteria grown in artificial media." "The phylacogens are made from a large number of species of the well-known pathogenic bacteria." I have read many of the case reports of patients said to have been cured by some of these specific phylacogens. They are equaled by many of the testimonials of "patent medicines" seen in the daily press. I consider the use of such preparations as these both dangerous and futile; dangerous because of the severe reactions which take place; futile, because their use is not founded on proper observation or followed by justifiable results. The dangers in the indiscriminate use of serums and vaccines are due chiefly to a misunderstanding of the basic laws and the following of the uncensored advice of the manufacturers of vaccines and serums.

Discussion on Serums and Vaccines

Dr. S. Solis Cohen: The keynote struck in the papers may be summed up in the word "caution." We must use these remedies intelligently, for definite purposes, under definite conditions. That may be said of any remedial measure. At the present time we must use a scientific empiricism in the application of biologic agents, for I am not so sure that we have arrived at a scientific explanation of the action of vaccines.

Dr. James Tyson: From my observation of vaccine and serum treatment in the hands of other men, I am convinced that the treatment is justified in a great many instances, especially after a trial of the older methods of treating such affections.

Dr. H. M. Christian: In the department of medicine in which I am specially interested I think we have fairly well crystallized in our minds the futility of vaccine therapy.

NATIONAL ASSOCIATION FOR THE STUDY OF PELLAGRA

Third Triennial Meeting, held at Columbia, S. C., Oct. 21-22, 1915

(Continued from page 2029)

The Prevention of Pellagra: A Test of Diet Among Institutional Inmates

Drs. Joseph Goldberger, C. H. Waring and D. G. Willets, Washington, D. C.: Published in *Public Health Reports*, Oct. 22, 1915, p. 3117, and commented on in "Studies of Pellagra," editorial, The Journal, Nov. 20, 1915, p. 1818.

The Treatment of Pellagra by Diet

Dr. David G. Willets, Washington, D. C.: In June, 1914, the treatment of acute pellagra by a rich animal protein diet was begun at the Georgia State Sanitarium, Milledgeville, Ga., by W. F. Lorenz of the United States Public Health Service, under the direction of Surgeon Joseph Goldberger. Beginning Aug. 19, 1914, the work was continued by me until Oct. 24, 1914, when the therapeutic study was discontinued, and the preventive study reported in another communication (Goldberger, Waring and Willets) was begun.

Forty-three patients were treated. Of this number eight are excluded because death occurred after brief periods of observation, three because of the presence of complications in themselves competent to cause a fatal outcome, and two because they were transferred from the ward with severe complications after brief periods of residence on the pellagra ward. Of the remaining thirty patients eleven improved, seventeen recovered and two died, giving a mortality of 6.6 per cent. The treatment given was simply a generous diet, rich in animal protein; in some of Dr. Lorenz' cases bismuth subnitrate, emulsion of cod liver oil and an antiseptic mouth wash were prescribed.

No far-reaching conclusion can be drawn from the results obtained in this work. Those who have cared for insane patients will appreciate the difficulties one encounters in dealing with this class of individuals. Many of the patients were so negative or so excited that their actions could not be controlled. These factors all tend to retard favorable results from any form of treatment. A mortality of 6.6 per cent. in this type of patient must, therefore, be considered as an extremely encouraging result, and this must be kept in mind in judging the merits of any treatment other than diet.

DISCUSSION ON PREVENTION AND TREATMENT OF PELLAGRA BY DIET

DR. J. F. SILER, Washington, D. C.: In our work in Spartanburg County we have constantly noted that diet has a very great deal to do with pellagra, its cure and prevention. As to whether an incomplete or poorly balanced diet is merely one of the most important predisposing factors or is the one essential factor still requires demonstration. Many epidemiologic observations warrant the inference that an incomplete diet is only an important predisposing factor bearing somewhat the relationship to pellagra that it does to tuberculosis. It has been a common observation with us that if a patient suffering with acute symptoms of pellagra followed our advice in applying the same treatment for pellagra as for tuberculosis—an abundance of fresh eggs and milk—his chance of recovery was much enhanced. Also, patients carrying out this line of treatment would, after recovery, revert to their former incomplete dietary, and yet pass through the following one, two, three or four years without any manifestations of pellagra. Some schools hold even today that tuberculosis is essentially a food deficiency disease for which the treatment is eggs and milk. It still remains to be demonstrated scientifically whether eggs, milk and fresh meat bear the same relationship to pellagra as to tuberculosis, or, on the other hand, contain large amounts of true pellagra-preventing vitamins as do peas and beans contain large amounts of beriberi-preventing vitamins.

DR. H. F. HARRIS, Atlanta, Ga.: I arrived at Dr. Goldberger's conclusion shortly after I began working on the subject ten or twelve years ago. Subsequently I discovered that this idea was very old. Solair advanced the view definitely in 1781. He took ten patients and fed them on good food for a year and was rewarded by observing that the eruption failed to appear next year and good results were observed after that. I believe there are certain possibilities of spring recurrences being explained by bad maize. It is well known that the starches of maize and other cereals when acted on by molds produce poisons, and in accordance with this is the modern acceptation of pellagra by the Italian writers. It has been shown that it is too cold for molds to grow naturally in winter. They develop in the spring, and toxic phenols develop in the maize in large amounts. When the temperature goes up, the action ceases, and the poisonous phenols are perhaps changed. In summer this does not occur, while in the fall these poisons begin again to form, and it would be assumed that these poisons would be most likely to recur. Pellagra has uniformly and persistently occurred where people have persisted in eating maize, and disappeared where they ceased to eat it.

DR. JAMES ADAM HAYNE, Columbia, S. C.: If you can give a man food in proper proportions, in such a way that he can assimilate it, you will strengthen his resistance and make him throw off the disease. That is as far as the question of diet can affect the causation of disease. If a man who knew nothing about tuberculosis was taken to a tuberculosis camp and told that the patients were given meat, eggs, milk and other food in proper proportion; that their temperature was reduced, their physical well-being improved, and that, to all intents and purposes when they left the institution they were well, would he conclude that a properly balanced ration was the cure for it? He might conclude it was a cure for tuberculosis, but would he conclude that an improper diet was the cause of tuberculosis?

DR. W. J. MACNEAL, Washington, D. C.: There is poor nutrition among people who have good things to eat. Other factors in the body besides the food may predispose to the disease. We certainly have these summer diarrheas among well-to-do people. Children's diseases occur among those who have good diet as well as among those who do not. Overwork is a factor. The question of childbirth and operations are predisposing factors in pellagra. The nutrition of the aged gradually diminishes. Poor diet is only one factor. We have poor nutrition throughout the world, but pellagra is a local disease in its first attack, not necessarily in its recurrences, and that is the important dstinction to which Dr. Goldberger referred.

DR. J. W. BABCOCK, Columbia, S. C.: I deny that pellagra is a local disease. You will find pellagra in all parts of the United States and in Canada; it is a universal disease.

DR. G. C. MIZELL, Atlanta, Ga.: The way the foods that Dr. Goldberger prescribed are prepared has a bearing that he has not spoken of in his paper. Four years ago I believed in forced feeding and in a great deal of food, and I pushed it. I now know that I lost some cases because I forced food. It is a mistake to force food on a pellagra patient, or to take a nursing infant from the breast. Let the infant continue nursing; results will bear out the value of this suggestion. Dr. Willets' patients were extremely emaciated. The weight of the patient, when he comes to you, will have a lot to do with the course of the disease. Emaciated patients recover more rapidly and are less likely to have a recurrence.

DR. DAVID G. WILLETS, Washington, D. C.: I fully appreciate that there are some very severe cases in which forced feeding must be used with caution, but to make the general statement that forced feeding of pellagra is incorrect would give a wrong impression. In the majority of acute cases the patients really need forced feeding. At least, that is the way it impresses me, from the response of my patients to diet. I wish to say that in the work I did and reported here, extremely careful attention was paid to the patients. They were weighed at very frequent intervals, and I took change in weight as being a pretty good index as to how the patients were getting on. Dr. Mizell is right about certain severe cases. One should proceed with caution in feeding the patients. It is best to give them small quantities at a time, but frequently.

DR. JOSEPH GOLDBERGER, Washington, D. C.: It is an interesting psychologic phenomenon that the profession is extraordinarily interested in the discussion of pellagra. I can get a rise out of physicians any time the cause of pellagra is mentioned, and they will talk by the hour; but if one diplomatically suggests the very simple or practical device of treating the patient, they will change the subject. There is an adage to the effect that "the proof of the pudding is in the eating thereof," and the only thing that I care to say in closing is, Suppose we stop talking so much. We do not have to inject salvarsan, etc.

Some Phases of the Work of the Robert M. Thompson Pellagra Commission

DR. W. J. MACNEAL, New York: This is essentially the second progress report of the Thompson-McFadden Pellagra Commission as published in September and October, 1914, in the *Archives of Internal Medicine*.

DISCUSSION

DR. JOSEPH GOLDBERGER, Washington, D. C.: The commission states that its extensive dietary study failed to indicate the presence of either a pellagra-producing or a pellagra-

preventing food in the mill village populations studied, and it expresses the opinion that no such things exist. By reason of the inadequacy of the method of analysis applied to the data, no conclusions whatever are permissible. That this is so is perhaps best illustrated by referring to that portion of the dietary study dealing with milk. The commission suggests that the daily use of milk has preventive value; 13.5 per cent. of the families using milk daily had one or more cases of pellagra; 22.5 per cent. of those using milk habitually (as often as twice a week) had one or more cases, and 13.6 per cent. of those using this food rarely had one or more cases. Their results show that the "daily" and the "rare" use of milk have preventive value. This singular paradox alone is enough to convince the impartial student that this dietary study cannot be seriously considered. When the data in this study are properly viewed one finds clear indications of the existence in the mill villages studied by this commission of an inverse proportional relation between the percentage of families using meat and using milk "daily" and "habitually" and the degree of pellagra prevalent in that village. In other words, of two groups of villages, that group which shows a larger proportion of families using milk "daily" and "habitually" will have the smaller amount of pellagra.

The commission considers the results obtained from its domiciliary study as conclusively proving that pellagra is an infectious disease; but as in the dietary study, no conclusion whatever is permissible. The fundamental method of analysis employed in this domiciliary study is defective in that, as regards the so-called second zone, the percentage of incidence of new cases varies not alone with the actual number of cases, but also with the position of the houses in which the new cases may happen to appear.

As for the relation of pellagra to sewerage, as shown by the practical freedom of the sewered sections of Spartanburg, this may be an instance of "false correlation." When we recall that pellagra is essentially a disease of poverty an explanation for this seemingly mysterious phenomenon at once suggests itself. In a community having a sewered section and an unsewered section, it is very likely, and in Spartanburg it actually so happens, that the sewered section includes the best residential portion of the town. The sewered section is that part of the town in which the well-to-do people live, in which even the neophyte pellagrologist would not expect to find much pellagra, sewers or no sewers.

DR. ROY BLOSSER, Atlanta, Ga.: Dr. MacNeal ignores sensitization altogether, but I think this is one of the greatest established facts in regard to certain foods. It means that during the development of pellagra the people who develop it may be using only a fractional part of the foods used by those who do not develop the disease, but they are so sensitive that the smaller amount has a greater effect. He did not say what percentage of the total number who had pellagra used maize. That is of vital importance. His dietary study is valueless unless he takes into account all the foods eaten. I am not saying this particularly because he left out sugar-cane products. He did not show what they ate in the sections with the good water closets, where they had never had pellagra. He did not show whether, when they installed good water closets, there was any change in what they ate. That I consider of great importance. He thinks the infection from bad closets might combine with the poor nutrition to cause pellagra, but he did not show that there was any poor nutrition. In my experience very often during the time that they show their earliest symptoms of pellagra, they show evidences of unusual nutrition; they are fat and overweight.

DR. J. F. SILER, Washington, D. C.: It must be remembered that when we began our studies, corn itself was the article incriminated, and this study was made primarily to determine whether corn or any other particular article of food could be correlated with the occurrence of pellagra. We thought of considering groups of foods, but it took two of us about three months to work out the correlations presented by Dr. MacNeal. So far as the grouped consideration (statistical) of the diet of the individual is concerned, we found it to be most feasible to consider only the pellagrins. We were very much struck by the sewerage question, and the observations were so striking that we considered it desirable to present them in order that they might or might not be confirmed by other observers. We investigated two mills at Union, S. C., in 1914. One had the water carriage system of disposal and the other open surface privies. At these two mills we found that pellagra had diminished very markedly in the sewered mill following the installation of a sewage disposal plant, while in the other no such change for the better had occurred. Dr. Maddux says that few new cases occurred in 1914 in the sewered mill, while a large number of cases have occurred in the unsewered mill. Dr. Weston told me of two mills in Columbia, one with sewers and the other without, and that he knew of only two cases in the sewered mill village, and both of the patients had the disease on arrival. In the unsewered mill a large number of cases occurred in 1915. It is wise to follow such observations over a long period of time before arriving at any definite conclusions.

This dietary study has been a correlation as to the frequency of the use of certain foods. Of one food, in which there exists no correlation, no mention has been made. Practically every family throughout the South uses wheat flour every day. It forms the most important bread component of their dietary. Whether any changes have occurred in the milling of wheat flour in the last ten or fifteen years which could have removed the hypothetic pellagra-preventing vitamins, I do not know. I know that before the Civil War more whole wheat flour was used in the South, but so far as I have been able to learn, no important changes in milling have occurred during the past ten years. It might be possible that the finely milled white wheat flour could bear somewhat the same relationship to pellagra as does highly polished rice to beriberi. Last winter I saw a patient from the South who had suffered a very severe attack of pellagra in 1911, and in securing a history of her food habits was somewhat surprised to learn that for two years prior to the initial attack of pellagra she had been in the habit of eating not less than twenty-four whole wheat biscuits a day to correct constipation.

DR. G. C. MIZELL, Atlanta, Ga.: In a series of eighty-two cases out of the 100 that I presented here in 1912 which came under observation in 1911, or before, there were six families containing more than one case. This series represented sixty-eight families, composed of 341 persons. Up to date there has not been a single new case in these families since 1911. In addition to this series of cases, I have been able to follow up another series of eighty-three cases which came under my observation from 1911 to 1913. The last series shows the same points of interest as the first series. The two series total 165 cases, representing 147 families, composed of 764 persons.

DR. JAMES D. BOZEMAN, Fort Worth, Texas: Until October 10 we had treated in our institution, 114 cases of pellagra this year, representing about 41 per cent. of admittances. The majority of these cases were drawn from Texas territory; about 80 per cent. represents the families of ranchmen or farmers who own their own farms or ranches. Now these farmers or ranchmen will tell you that their chief diet is milk, butter, eggs, beef and fresh hog meat, with of course the usual garden vegetables, and it is seldom that you find one who will admit that he does not live off the products of his own ranch and garden. If you ask them about the consumption of corn bread, they will likely laugh at you and reply that corn is raised to feed to horses and hogs. Some 15 per cent. of these men will tell you that they have corn meal on their ranch and that some of their boys (cowboys) enjoy corn bread, but we hardly ever have a cowboy in our institution for treatment. When asked about lard they will tell you that they do not use cottonseed products, but that the lard they use is made from their own hogs, raised and killed on their own ranches.

DR. H. F. IVY, Whitney, Texas: I believe that pellagra is an infectious disease. Those of us who have done much

surgery find that often a patient, unsuspected as a pellagrin, after an operation will develop a fulminating case of pellagra. I find that some persons after a long period of nursing—not of pellagrins—and anxiety, have developed pellagra. An excessive diet of sugar may eventually so derange the system that it will put us below par. Even too many beans will produce toxemia.

DR. W. J. MACNEAL, Washington, D. C.: The problem which confronted us was the analysis of the mass of data recorded on cards in the symptomatic fashion. I think the one method commonly used with at least 1,000 comparable observations is that adopted by Davenport and by Pierson. Where there are a number of variables in group statistics the theory of chance presupposes that in a large group under observation—anything above 1,000—any neglected factor will be of no avail. That is to say, the influence of any factor neglected in the analysis will have only a chance effect which will equalize itself in such a group. We were dealing with about 6,000 individuals and observations, and this was quite justified.

We must do something with the data besides theorizing with them. We must try and show some correlation. That is what we have attempted to do by the statistical method. It is probably unnecessary for me to point out that the table which Dr. Goldberger cites specifically relates to pellagrins and total families in which a case existed and did not originate. This is the correlation between the existence of a case in a family and the use of milk in that family at the time of our observation. So, from our point of view, this table has very little importance. Of course it all depends on whether or not you think there is any real difference and importance in distinguishing between this. All of our work has taken into consideration the first attack, as quite different from the subsequent attacks, and any one who has really studied pellagra and has followed it must acknowledge that there is a distinct and important difference between the first attack and subsequent attacks. The first attack occurs in certain definite places; the second attacks may occur anywhere. It is only by distinguishing between first and subsequent attacks that we have been able to bring out these distinctions.

(*To be continued*)

SOUTHERN MEDICAL ASSOCIATION

Ninth Annual Meeting, held at Dallas, Texas, Nov. 8-11, 1915

(*Concluded from page 2031*)

The Small Town: The Neglected Unit in Sanitary Administration

DR. A. W. FREEMAN, Washington, D. C.: The fundamental sanitary needs of the small town are those of water supply and excreta disposal. The shallow well and the privy must be condemned. Neither the well nor the privy is sufficiently protected. A public scavenger and the can privy should be advocated. Such privies are easily cleaned, and the breeding of flies is kept down and public health protected. The great need of the South today is the improvement of the rural home.

Sanitation of the Rural Home

DR. R. N. WHITFIELD, Florence, Miss.: The rural home needs more improvement, as a rule, than any other home. In the South the rural population is greatly in excess of that of the cities and towns, and the public health services have been performed in the cities and towns to the exclusion of the rural districts. One exception has been made, and that is the work done by the Rockefeller commission, which has been laboring five or six years in eleven of the Southern States. A full-time health officer should be placed in charge of every county in the South, and he should be a capable and competent man.

Intensive Community Health Work

DR. JOHN A. FERRELL, New York: Intensive community health work differs from ordinary health work in that a concrete health problem is taken and adhered to until measurable progress has been made. It is limited to a relatively small circumscribed area instead of being diffused throughout a large area, such as a state or a county. A detailed record or a survey is made of the area selected, including every home, school, church, road and stream, and usually the information is shown on a map. Every home is visited and inspected, and every person examined, as far as practicable, with reference to the particular health problem under consideration. A record of the disease in the past and its probable consequences is made so that when the work begins there is a definite starting point.

Rural Sanitation in the South

DR. J. HOWELL WAY, Waynesville, S. C.: The employment of a full-time country health officer should be on scientific merits rather than on a political basis. The chief difficulty in county work is the lack of a well-defined plan of procedure. A rule of standards and model system will be worked out for counties soon. Eventually, when methods of rural sanitation become standardized, and our counties grow in population as well, the unit system operated by state boards of health will naturally and appropriately give place to the whole-time county health officer; but for the next five to fifteen years the unit system possibly is destined to exercise a more practical and helpful influence on the progress of rural sanitation than can be invoked by any adherent solely for the whole-time county health officer plan, which so many counties do not feel they may institute as yet.

Immediate Necessity of Intensive Health Work in the South

DR. A. L. LINCECUM, Austin, Texas: Housing conditions are deplorable, especially among the tenants in the farming districts. The absence of screens on the doors, windows and porches of these homes costs annually for treatment of malaria more than the expense of screening would be.

Use of Radium in Uterine Bleeding Due to Myometrial Dgeneration

DR. C. JEFF MILLER, New Orleans: Radium has proved a boon in inoperable cases of carcinoma, but I would not recommend it as the sole treatment in operable cases. The only treatment that promises relief from cancer is its early removal by surgery. I have used radium in a number of cases with beneficial and satisfactory results. Radium, when properly screened, may be used as economically inside the body of a patient as by being kept in a medicine case at the office.

Malaria and Uncinariasis

DR. W. S. LEATHERS, University, Miss.: Malaria and hookworm disease so devitalize the human body that typhoid and tuberculosis easily complete the destruction. The insidious diseases must be stamped out before any noticeable impression can be made on the diseases having a higher degree of mortality. Teaching simple sanitation to the people is one of the great duties of public health departments. I cannot understand why our government is spending millions to put water on lands in the West that will never be as productive as our lands of the South, and it will not give one cent to take the water off the land of the South. Our richest lands are those which become covered with water.

Immediate and After-Treatment of Railway Injuries

DR. W. W. GRANT, Denver: The importance and necessity of immediate first-aid treatment in such cases is apparent, by reason of the fact that these accidents are generally defined as contused, lacerated and mangled, and are much more prone to infection than smooth wounds. The application of iodin, hydrogen peroxid and alcohol, pending the transfer of the patient to a permanent place of treatment, is common. Probing is seldom justified under any conditions. It is dangerous to operate while the patient may still be suffering from the shock of an accident, and many surgeons do not realize the value of proper reaction before operating. To add a physical shock to physical injury will generally prove hurtful to the patient. There is no more urgent field for

skilled surgery than the treatment of mangled feet, hands and fingers. Lacerated tissues are more liable to infection and heal more slowly than other wounds. The sewing up of torn and lacerated wounds is a sure harbinger of infection. Such wounds will have to be opened up again. Drainage tubes constitute the safest plan for the prevention of infection. Scalp wounds are not generally attended by severe shock, and heal rapidly; but the most insidious wound is the small punctured fracture. Every such wound demands early investigation, or serious results are liable to follow.

Treatment of Malaria with Reference to Its Eradication

DR. T. E. WRIGHT, Monroe, La.: In one of the hospitals used by a railway in North Louisiana, 747 cases of malaria among the railway men were treated during the years 1912, 1913 and 1914. Between Jan. 1 and Nov. 1, 1915, 249 cases of malaria have been treated. The patients remained in the hospital from four to six days. This short stay in the hospital was due to the intensive treatment given malaria cases. This economic feature of intensive treatment and prompt results when applied to the whole malarial district of the South is a matter of much greater importance and should receive serious consideration on the part of medical men. Intensive treatment of malarial patients must be employed in order to decrease the number of carriers. The intravenous use of quinin, administered with proper care, in doses of 10 grains, in proper dilution, repeated in from eight to ten hours once or oftener, according to the case, is the type of intensive treatment that more nearly sterilizes the blood of malaria than any other method heretofore employed. Fewer cases of recurrence will follow the intravenous use of quinin. The discomfort through this treatment of the patient is slight or of short duration, not lasting over five or six minutes.

The Sex Question in Public Health

DR. ISADORE DYER, New Orleans: The sex question is essentially one of public health. Facts, not preachments, are needed in presentation of the sex question to young men and women. Perhaps the public school would be a good place to teach sex hygiene, and the proper men and women can be found to tell the children about the things that every child should know.

DISCUSSION

DR. E. H. MARTIN, Hot Springs, Ark.: Children in public schools should be separated. Segregation of sex is practiced in a Mississippi town in the public schools. Co-education causes a boy to learn subservience to a woman, and he does not make a very good soldier in later years.

DR. ALLAN W. FREEMAN, Washington, D. C.: I have been attending public health meetings for a number of years, and have never heard a frank and honest discussion of the sex question. It is a question of health and should be treated as such.

Syphilis: Its Relation to Public Health

DR. LLOYD THOMPSON, Hot Springs, Ark.: All affected persons should be registered and a heavy fine should be imposed on the physician for failure to report. The marriage license should not be given to any one until he has been examined thoroughly and has withstood certain tests. Employers should require a bill of health of every employee and should refuse employment to any person who will not submit to a physical examination. If prostitution is permitted, it should be put under strict surveillance and regular medical examination.

Health Conservation Through Life Insurance Companies

DR. J. L. DAVIS, Waco, Texas: The life insurance companies of the United States have taken the lead in matters of sanitation and right living. They have been advocating proper living and demanding it of their policy holders. Tuberculosis is recognized by insurance companies as exceedingly infectious, and for many years they have made careful inquiries into the lives of applicants for insurance along this line. They have gone so far as to ascertain whether the applicant has been associating with tuberculous people. Typhoid fever is the arch enemy of insurance companies. Next is alcohol, and the greatest temperance lectures of the age can be taken from the records of almost any life insurance company.

Sanitary Preparedness

DR. RUPERT BLUE, Surgeon-General U. S. P. H. S., Washington, D. C.: The maintenance of sanitary preparedness is no less the duty of the individual than it is of the community. It is not altogether easy to teach so convincingly that the layman will appreciate these things. If the simple truths of sanitation are impressed on the plastic mind of the schoolchild, we gradually create a people in whom sanitary living is a habit. If by child hygiene we produce better and stronger men and women, these in turn will bring into the world stronger children, because they will have learned that mating with the weak and defective produces weak and defective children. Thus we shall have a practical eugenic betterment.

The impression I desire to leave in your minds is that, if America would avoid decay and retrogression, if she would be ready for the supreme trial of strength when the hour of calamity comes, she must retain her sanitary defenses at all times. The sane and healthy nation, republic of healthy minds in healthy bodies, adding by its labors, uninterrupted by disease, to the material and spiritual welfare of the world, is prepared alike for peace and war.

The Allen Treatment in Diabetes by Fasting

DR. ISAAC IVAN LEMANN, New Orleans: Allen believes that we have been wrong in trying to maintain or increase the weight of our diabetic patients when glucosuria persists, for such attempts simply keep the body at a size beyond the capacity of the pancreas to provide sufficient internal secretion for it. Better, therefore, to have the body thinner and have enough pancreatic secretion to do the work of a smaller body. This pancreatic internal secretion he would have us conceive as an amboceptor binding blood sugar to the tissues. When the amboceptor is lacking, the unbound sugar is secreted by the kidneys. Allen's proposals are: (1) to starve the patient until the urine is sugar-free; (2) to add gradualy to his diet until the point of tolerance of protein and fat, as well as of carbohydrate, is reached; (3) to remain within these points of tolerance, no matter how low they may be and no matter how thin the patient may be. Attempts to increase the patient's weight by the addition of a large number of fat calories to the diet results in the return of the glucosuria. My short experience with Allen's method, embracing now five cases, has served to free me of the fear of precipitating a severe acidosis by the sudden starvation, and, secondly, it has convinced me in one severe case of its great possibilities in certain cases at least. The other four cases were mild. Two of them I have tried in vain to make aglucosuric by gradual reduction of carbohydrate intake, then of protein intake, and finally in one of them by the interposition of green days. These two patients became aglucosuric in twenty-four and forty-eight hours of starvation, respectively. The other two mild cases required twenty-four and seventy-two hours' starvation, respectively. In none of these four did acetone appear in the urine. None of the patients had any serious complaints. Not only was the disappearance of the glucosuria brought about more promptly and with less trouble both to the patient and to me than by the former technic, but also it was possible to build up these patients quite a livable diet and still maintain them aglucosuric. In the two patients whose points of tolerance I had tried to determine by the older method, I found the new tolerance quite satisfactory and far in excess of what it had been prior to the past. My brief experience with the method has been sufficiently satisfactory and enlightening to encourage me to proceed.

Pyelitis in Infancy and Early Childhood

DR. L. R. DEBUYS, New Orleans: The majority of cases of pyelitis occur in children under 3 years of age, and of these most of them under 2. In from 90 to 96 per cent. of the cases females are affected. It is highly probable that

much of the trouble in the adult female kidney may have its origin in the infections of the kidney during infancy and childhood. Pyelitis may be primary or it may be secondary to a cystitis. The treatment of pyelitis may be included under four heads: (1) drugs; (2) irrigation of the pelvis by the direct method; (3) irrigation of the pelvis by the indirect method; (4) vaccines. Many drugs have been advocated, among them hexamethylenamin, potassium citrate, methylene blue, creosote and salol. Of these the first two are used most frequently. Hexamethylenamin is best given early and in large doses, from 2 to 3 grains, every three or four hours, to a child from 1 to 2 years of age. By far the most reliable method of treatment in pyelitis in the small patient is by irrigation of the pelvis of the kidney by the indirect method. By this is meant the giving of large quantities of liquids. It is well to dilute their food so that they may be always hungry, and in order to satisfy their hunger they must take large quantities of fluids to receive a sufficient quantity of nutriment. Vaccines are sometimes of benefit and should be autogenous. Their effect is not uniform and reliable, but in some instances has been of advantage. They should be given in doses beginning with 50,000,000 and increasing rapidly to 200,000,000 or even 250,000,000, the interval varying from three to five days, depending on the reaction of the patient and the recovery from the reaction. In the resistant and chronic cases the autogenous vaccine is more especially indicated. Should the vaccine not produce an immunity after from three to five vaccinations, as shown by the bactericidal property of the blood, its use should be discontinued.

Dietetic Treatment of Bronchial Asthma

DR. ALLAN EUSTIS, New Orleans: A review of 178 cases justifies the following conclusions: 1. Most cases of bronchial asthma are due to absorption of proteolytic toxins. 2. These toxins may be absorbed from a suppurating accessory sinus in the nose or from the intestinal canal. 3. Treatment of intestinal toxemia is as important as any drainage of focal infections. 4. An alveolar abscess may be the focus from which the toxin is absorbed. 5. In the dietetic management of asthmatics, animal proteins, with the exception of buttermilk, should be eliminated from the dietary as much as possible.

Influence of Potassium Iodid on Syphilitic Reaction

DR. RANDOLPH LYONS, New Orleans: That iodin is the essential factor in producing the positive reaction in a non-syphilitic individual is demonstrated by the fact that hydriodic acid, thyroid extract and possibly hyperthyroidism will produce a similar effect. When a luetin test is made, it is essential that no iodin in any form (potassium iodid) be taken internally. Furthermore, it is important to know that iodin has not been ingested for at least three weeks previous to the performance of the test. Torpid or later reactions occurring after intervals of two weeks are usually due to the ingestion of potassium iodid. The reaction may be influenced after an interval of two months by the subsequent administration of potassium iodid (Sherrick). Anomalous reactions may generally be attributed to potassium iodid. Activation of the luetin test with mixed treatment vitiates it. Clinical differentiation between the two, luetin reaction and iodin reaction, cannot be made with any degree of certainty. When a positive test develops very rapidly, an iodin reaction may be expected. The extreme prevalence of the use of iodin in some form (potassium iodid) will necessitate a critical review of the published reports of positive reactions in order to eliminate the iodin reactions. This will undoubtedly lower the percentage of positive results.

Influence of the Injection of Blood on Anemia and Infections in Children

DR. J. SPENCER DAVIS, Dallas, Texas: In the injection of whole blood we have the therapeutic means of increasing the number of white blood corpuscles. In many cases a crisis in the disease can be brought on, and the destruction of bacteria in the body is hastened. We have found it of great value in the acute infectious diseases of children, such as scarlet fever. Like all other therapeutic measures, it sometimes fails where it is most needed, and its value is dependent on the ability of the individual to respond to the injection. I have never seen any bad results following the injection, although at the site of the injection we have the same series of color changes which occur in an ordinary bruise.

Scurvy Versus Rheumatism

DR. DANDRIDGE P. WEST, New Orleans: The prognosis of scurvy depends on the early recognition of the disease, severity of the symptoms, and the complications. Death in untreated cases results usually from hemorrhage, exhaustion and bronchopneumonia. In recognized cases, the treatment is highly satisfactory, and none is more easily instituted. It may be covered briefly by the rule: Discontinue all previous feedings, especially if they have been patented, boiled or sterilized, give fresh milk, fruit juices, and if the digestion will stand it, purée of potato or green vegetables. In all suspected cases the effect of treatment, the therapeutic test, is of the greatest value, inasmuch as the results show in forty-eight hours, and no harm, as a rule, can be done by waiting so long. If in doubt when the baby is unduly irritable on being handled, and shows perhaps local manifestations of joint pain, preclude first the idea of rheumatism, change the diet to raw milk, and give orange juice.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

November, XVIII, No. 3, pp. 329-598

1 Development of Human Pharynx. Pharyngeal Derivatives. B. F. Kingsbury, Ithaca, N. Y.
2 Lymph-Flow and Associated Morphologic Changes in Early Superficial Lymphatics of Chick Embryos. E. L. Clark, St. Louis.
3 Origin of Definitive Sex-Cells in Female Chick and Their Relation to Primordial Germ-Cells. C. H. Swift, Chicago.
4 *Model to Illustrate Probable Action of Tectorial Membrane. I. Hardesty, New Orleans.
5 Development of Blood Vessels of Mammary Gland in Rabbit. H. M. Wahl, Madison, Wis.
6 Study of Wandering Mesenchymal Cells on Living Yolk-Sac and Their Developmental Products; Chromatophores, Vascular Endothelium and Blood Cells. C. R. Stockard, New York.

4. **Action of Tectorial Membrane.**—According to Hardesty, the tectorial membrane is a vibratory structure and from its consistency, shape, proportions and position, is the chief vibratory structure in the cochlea. It may vibrate in such a way that a modification of the telephone theory of hearing may be applied to it. Sound waves of low vibration frequency produce vibrations in the entire tectorial membrane regardless of amplitude, while those of higher frequency produce vibrations in varying extents of it, depending on their amplitude. Among the sound waves of the higher vibration frequencies capable of being appreciated, the extent or length of the tectorial membrane in which efficient vibrations may be induced depends more on the vibration frequency or pitch than on the amplitude of the sound waves. The higher frequencies being damped out more readily than the lower, varying extents of the membrane are affected according to the vibration frequencies of the waves applied, the highest frequencies affecting the thin, basal end of the membrane alone. Some evidences of what may be considered resonance in the tectorial membrane were indicated, but were thought questionably trustworthy as such. No resonance of the form demanded by the Helmholtz theory is possible. It is suggested that no resonance or analysis of sound is accomplished by the cochlea in itself other than such as may be possible in the evidences that, beginning with its basal end, different extents of the tectorial membrane may be thrown into vibration by different sound waves, depending on the frequency and amplitude of vibration. It is admitted that waves of low frequency and high amplitude may induce vibrations also in less flexible and otherwise less adapted

basilar membrane as a whole. Attention is called to the fact that its chief load, the spiral organ, increases in size in passing from the base to the apex of the cochlea and that this suggests a vibratory behavior possible in it similar to but not so comprehensive as that claimed for the tectorial membrane.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

October, III, No. 4, pp. 185-246

7 Barbados in British West Indies. Pellagra in Barbados. J. F. Siler, U. S. Army.
8 Transmission of Malaria in Philippine Islands. E. L. Walker.
9 Endamebiasis of Mouth. K. M. Lynch, Charleston, S. C.

Annals of Ophthalmology, St. Louis

October, XXIV, No. 4, pp. 611-835

10 Carcinoma, Apparently Primary, Arising from Ciliary Processes. E. R. Neeper, Colorado Springs.
11 Peripheral Annular Infiltrate of Cornea Following Scleral Perforation. F. Lane, Chicago.
12 Albinism in Man with Special Reference to Eye. W. E. Gamble, Chicago.
13 Blind Spot. H. S. Gradle, Chicago.
14 Complete Left Lateral Hemianopsia with Glucosuria as Result of Slight Trauma. F. E. Woodruff, St. Louis.
15 Mydriatic Action of Dextrohyoscyamin. R. J. Terry and M. Wiener, Washington, D. C.
16 Conscious Vision in Development of Amblyopic Eye. F. P. Lewis, Buffalo.
17 Is Migraine a Forerunner of Glaucoma? R. S. Lamb, Washington, D. C.
18 Herpes Zoster Ophthalmicus. B. Chance, Philadelphia.
19 Fifty Consecutive Intracapsular Cataract Operations. W. A. Fisher, Chicago.

Archives of Pediatrics, New York

October, XXXII, No. 10, pp. 721-800

20 Plea for Accurate Statistics in Infants' Institutions. H. D. Chapin, New York.
21 Apparently Complete Recovery After Operation for Cerebellar Tumor. L. Porter, San Francisco.
22 *Rapidly Advancing Pulmonary Tuberculosis; Report of Case. F. Hall, New Rochelle.
23 Some New Features in Diagnosis of Scurvy, with Brief References to Metabolic Changes. A. Brown, Toronto, Canada.
24 *Management of Enuresis. A. Newlin, Philadelphia.
25 Fatal Afebrile Nonparalytic Polioencephalitis. Treatment by Autoinoculation with Spinal Fluid. L. C. Ager, Brooklyn.

22. **Rapidly Advancing Pulmonary Tuberculosis.**—The case reported by Hall was evidently one of a common type of tuberculosis. A pneumococcus infection of the respiratory tract occurred in a child with tuberculosis largely confined to bronchial lymph nodes, the tuberculosis spread rapidly throughout the lungs and body. The Roentgen ray made evident early the tuberculous lesions eliminating the diagnosis of simple bronchitis, influenza infection or bronchopneumonia. It showed the progress of the disease from the hilus into the lobes, most marked in the right lower and the appearance of a cavity before these were evidenced by physical signs. The von Pirquet test gave a marked reaction early in the disease before the patient failed. It was faint as the child became weaker and absent a few days before death. Tubercle bacilli were not found until late in the disease, when the diagnosis was already well established. Then they were found first in the stools, later in the sputum.

24. **Management of Enuresis.**—The method of management of enuresis, whether it be diurnal or nocturnal, or both, that has given Newlin the best results, consists in the simple procedure of anticipating the involuntary act by a voluntary emptying of the bladder. This is the usual accompaniment of any treatment, but, Newlin says, when carried out systematically, can preclude the use of drugs absolutely; it gives far better results than when the chief reliance is placed on medicines with only perfunctory instructions as to the actual management of the child itself. This method of handling even obstinate cases of enuresis is rarely carried out systematically, but when it is so conducted gives almost invariably successful results. The chief obstacle encountered is the difficulty of impressing on the mother or nurse the fact that unless the instructions are absolutely faithfully followed the result is failure.

The nurse is given a sheet of paper with the hours of the day and night placed in a vertical row at the left-hand margin under the heading of the day of the week. If the enuresis occurs on an average of every two hours, she is instructed to put the child on the chamber every hour for the first twelve hours. If she finds the clothing wet at any such time the hour is noted on the chart. At night the child is lifted almost as frequently during the early hours, that is, up to 11 o'clock or midnight; after that every second hour is usually all that is necessary for the first night. At the end of the first twenty-four hours she then either has a clear chart or one with several hours marked as indicating the time of the enuresis. On the second day she is guided by her chart of the previous day, and she may extend the length of time between the voluntary urinations, always, however, anticipating the hours marked as "wet" on the day before, placing the child on the chamber at least a half hour before the time indicated.

Bulletin of Johns Hopkins Hospital, Baltimore

November, XXVI, No. 297, pp. 367-390

26 *Studies on Cerebrospinal Fluid and Its Pathway. Calcareous and Osseous Deposits in Arachnoidea. H. Cushing and L. H. Weed, Boston.
27 *Calcium Factor in Hemophilia. A. F. Hess, New York.
28 Bacteriologic Results in Chronic Leukemia and in Pseudoleukemia. C. H. Bunting, Madison, Wis., and J. L. Yates, Milwaukee.
29 Iconographic Notes on Girolamo Fracastoro. A. C. Klebs, Baltimore.
30 *Experimental Study of Factors Responsible for Noninfectious Bone Atrophy. E. G. Grey and G. L. Carr, Boston.
31 Origin of Lactic Acid Bacteria in Milk. P. F. McGuire, Baltimore.

26. **Calcareous and Osseous Deposits in Arachnoidea.**—Cushing and Weed summarize the results of their study as follows: Calcareous depositions in the form of psammoma bodies, or corpora amylacea of varying stages of development and of varying size, are of common occurrence in the arachnoidea of man and of the lower animals. Associated with this process of calcification there is apt to occur a hyperplasia of the arachnoidal mesothelium. The deposits of lime salts are apparently laid down in cell bodies and in this membrane can bear no relation to the blood vessels. The occurrence of true bone formation in the arachnoid of man should be regarded as a similar phenomenon, except that one may consider the process of ossification to be proliferative rather than degenerative. The so-called dural endotheliomas show histologically the same cellular arrangements with calcareous osseous depositions that are commonly found in the arachnoid and therefore take their origin in all probability from the mesothelium of this membrane.

27. **Calcium Factor in Hemophilia.**—Typical hereditary hemophilia is not associated with a deficiency to calcium. Hess' investigations showed that the addition of calcium to the blood in vitro delays rather than hastens coagulation. Furthermore, a deficiency could not be established by quantitative determinations of the calcium in the blood, and a metabolism study showed that the exchange of lime salts, as well as of numerous other inorganic as well as organic substances, differed in no way from normal.

30. **Study of Factors Responsible for Noninfectious Bone Atrophy.**—A destruction of the sensory nerves to a part according to Grey and Carr occasions no direct local atrophy of bone. A destruction of the motor nerves, on the other hand, leads to a certain amount of atrophy. This, however, is indirectly the result of inactivity of disuse and is directly proportional in extent to the degree of paralysis present in the part. Local venous congestion leads directly to no recognizable changes in the structure of bone. Local anemia due to injury to the arterial supply, except in an extreme degree, likewise occasions no bone atrophy so long as the part remains functionally active. Inactivity atrophy may appear soon after immobilization of a limb—as early as the fourth or fifth day in rabbits. It is probably due to a decrease or to an absence of the functional stimuli necessary to the normal nutrition of bone. Immobilization retards the process of repair in bone injuries.

Cleveland Medical Journal

September, XIV, No. 9, pp. 581-630

32 Branchiogenic Carcinoma; Report of Case. M. L. Richardson, Cleveland.
33 Epidemiology of Whooping Cough and Diphtheria in Cleveland in 1914. R. G. Perkins, Cleveland.
34 Problems of Wounded Man in War. D. Marine, Cleveland.

Journal of Laboratory and Clinical Medicine, St. Louis

November, I, No. 2, pp. 79-154

35 Present Status of Abderhalden Reaction and of Theory of So-Called Abwehrfermente. J. Bronfenbrenner, Pittsburgh.
36 Protein Metabolism. J. J. R. Macleod, Cleveland.
37 *Treatment of Syphilis of Nervous System by Intradural Injections (Old Salvarsan). U. J. Wile, Ann Arbor, Mich.
38 Pharmacology of Bronchial Asthma. D. E. Jackson, St. Louis.

37. **Treatment of Syphilis of Nervous System.**—Fifteen patients have been treated by this method by Wile. None have suffered any ill consequences. In all but two patients definite objective improvement could be noted in the spinal fluid. With full allowance for the possible suggestive element, there was nevertheless a marked subjective improvement in the majority of the cases. Such improvement was not seen to be transitory but appears to be permanent. Three patients have disappeared from observation, but none of the remaining twelve have relapsed with regard to symptoms. Four patients have been restored to usefulness and are making a livelihood, which before their treatment they were unable to do. The patients showing the most marked improvement were those suffering from early brain or cord syphilis, but encouraging results were also noted in cases of tabes dorsalis. No patient received over three injections, but it seemed to the author that further treatment in cases in which improvement had occurred would be indicated.

Journal of Medical Research, Boston

November, XXXIII, No. 2, pp. 147-322

39 Histologic Study of Internal Secretory Glands in Mice Bearing Spontaneous Tumors. G. L. Rohdenburg and F. D. Bullock, New York.
40 Vascular Changes Following Intravenous Injections of Fat and Cholesterin. O. Klotz, Pittsburgh.
41 *Spontaneous Primary Tumors of Liver in Mice. Studies on Incidence and Inheritability of Spontaneous Tumors in Mice. M. Slye, H. F. Holmes and H. G. Wells, Chicago.
42 *Influence of Exposure to Roentgen Rays on Formation of Antibodies. J. P. Simonds and H. M. Jones, Chicago.
43 *Effect of Injections of Benzol on Production of Antibodies. J. P. Simonds and H. M. Jones, Chicago.
44 Studies in Experimental Transfusion. R. Ottenberg and W. Thalhimer, New York.
45 *Bacteriologic Study of Epidemic of Septic Sore Throat. C. Krumwiede, Jr. and E. Valentine, New York.
46 *Method of Producing Tetanus Toxin. J. F. Anderson and J. P. Leake, Washington, D. C.
47 Etiology of Protozoan Disease of Turkeys Known as Blackhead, Enterohepatitis, Typhlitis, etc. T. Smith, Boston.
48 Blastophthoric Effect of Chronic Lead Poisoning. C. V. Weller, Ann Arbor, Mich.
49 Direct Reading Potentiometer for Measuring and Recording Both Actual and Total Reaction of Solutions. W. T. Bovie, Boston.

41. **Spontaneous Tumors of Liver in Mice.**—Twenty-eight primary tumors of the liver were found by the authors in 10,000 mice of all ages dying natural deaths and carefully necropsied, but one other case is recorded in the literature. All were liver cell adenomas, one showing malignant structure and multiple metastases in the lung, two with malignant structure without metastases, and the remainder exhibiting all degrees from probable malignancy to simple adenomas. No tumors of bile duct type were found. Sarcoma-like growths were found in six, but these are more probably granulomas. No hemangiomas or other tumors were found. There were three carcinomas secondary to mammary gland tumors, and three secondary sarcomas. None of the tumors seemed to be the result of cestode infection of the liver or other evident cause. The coexistence of liver tumors with other primary tumors is high, there having been multiple tumors in ten of the twenty-eight cases; in three of these both tumors were hepatic, in the other seven, different organs were involved. Only six secondary tumors were found in the liver, three being from mammary gland carcinomas, one from a mesenteric sarcoma, and two secondary osteosarcomas.

42. **Influence of Roentgen Rays on Antibody Formation.**—The effect of exposure to Roentgen rays on the production of different antibodies is summarized by Simonds and Jones as follows: (a) The formation of agglutinins is appreciably lowered, although not so markedly as in the case of rabbits injected with benzol. (b) The attempt to study bacteriolysins for typhoid bacilli was less satisfactory than in the case of other antibodies. The authors' results do not warrant a positive statement, but the indications are that the production of bacteriolysins for *B. typhosus* in their animals was not greatly interfered with by exposure to Roentgen rays. (c) The opsonic content and the complement fixing power of the serum roentgenized rabbits did not differ appreciably from that of control animals.

43. **Injections of Benzol on Antibody Production.**—In the experiments detailed by Simonds and Jones rabbits were injected subcutaneously with a mixture of one part benzol and two parts olive oil. The doses were, as a rule, so adjusted that each animal received approximately 1 c.c. of benzol per kilogram of body weight. A depression in the production of hemolysins, agglutinins, and opsonins was evident in the animals injected with benzol as compared with normal controls injected with the same antigen. The depression was most marked in the case of hemolysins and least so in that of opsonins.

45. **Bacteriologic Study of Septic Sore Throat.**—The epidemic studied by Krumwiede and Valentine occurred during June, 1914, in Rockville Center, Long Island, a village of 4,250 inhabitants. It was soon evident that the common element among the infected persons was their milk supply. Out of 232 cases 205 obtained their milk from one dairy. Streptococci similar culturally and identical in their agglutination were isolated from cases of septic sore throat and from the udder of one cow, showing no evidence of mastitis, except the peculiar character of the milk from one quarter. The bacteriologic as well as the epidemiologic facts almost certainly show that the infection was primarily of human origin. In tracing the source of such an epidemic, the authors point out that the efforts should be towards finding cases of sore throat among those engaged in producing the milk, not mastitis in the cow alone. If human streptococci are found in mastitis, they are most likely secondary agents in an already existing inflammation due to bovine strains. The streptococci in different epidemics differ culturally and those similar culturally differ in their immunity reactions. Cultural similarity of strains from man and cattle is insufficient to prove their identity. Cultural identity in every detail or immunologic identity is essential.

46. **Method of Producing Tetanus Toxin.**—Anderson and Leake place on record the method of making tetanus toxin which has been used with minor modification at the Hygienic Laboratory of the United States Public Health Service since 1905, and, at the suggestion of the laboratory, in most of the establishments manufacturing antitoxin subsequently. At the Hygienic Laboratory the toxin is prepared for the purpose of standardization of tetanus antitoxin in accordance with the American method, while in the antitoxin establishments it is prepared for the active immunization of horses. The important points in the method are the method of preparation, freshness, and reaction of the medium, the preliminary cultivation, and the growth without the use of oil, vacuum, inert gas, or pyrogallate—a great advantage; the anaerobiasis is attained by inoculating liberally into liter flasks immediately after steaming. For details the original article should be consulted.

Journal of Parasitology, Urbana, Ill.

September, II, No. 1, pp. 1-50

50 Occurrence of Trypanoplasm, Probably Trypanoplasma Borreli Laveran et Mesnil, in Blood of Common Sucker, Catostomus Commersonii. J. W. Mavor, Madison, Wis.
51 Two New Cases of Polyradiate Cestodes. W. D. Foster, Washington, D. C.
52 Sarcocystis Tenella, Railliet. J. W. Scott.
53 Egg Variation in Trematode Species. W. W. Cort, St. Paul, Minn.
54 Some New Gregarine Parasites from Arthropoda. M. E. Watson, Chicago.
55 Pneumonyssus Foxi, Nov. Sp. An Arachnoid Parasitic in Lung of Monkey. (Macacus Rhesus.) F. D. Weidman.
56 Cestode Cysts from Muskrat. E. Linton, Philadelphia.

Journal-Lancet, Minneapolis

November 15, XXXV, No. 22, pp. 619-648

57 *Subdiaphragmatic Abscess. E. S. Judd, Rochester.
58 Syphilis of Nervous System. W. A. Jones, Minneapolis.
59 Streptococcicosis. H. L. Ulrich, Minneapolis.
60 Convergent Strabismus; Its Causation and Treatment. A. E. Johnson, Watertown, S. D.
61 Prostatectomy, with Special Reference to Preliminary and Post-operative Treatment. E. C. Robitshek, Minneapolis.

57. **Subdiaphragmatic Abscess.**—In the Mayo's series of thirty-six patients cited by Judd there were eleven deaths. In almost every instance, death was due to an extension of the infection to the liver and to the formation of multiple abscesses in this organ. From a review of these cases, it seems to Judd that better results will be attained (1) by efforts to make earlier diagnoses, (2) by being suspicious of any case that shows more sepsis than can be accounted for, and (3) by employing the aspirating-needle early. When drainage has been established, it is important to maintain it until the infection has all disappeared and until there has been ample time for the cavity to become obliterated.

Medical Record, New York

November 27, LXXXVIII, No. 22, pp. 903-944

62 Study of Fifty-Nine Thousand and Two Hundred and Seventy Exposures of Ordinary Life Insurance Showing Urinary Impairments at Time of Acceptance. J. B. Ogden, New York.
63 *Form of Typhus That Is Endemic in New York City. N. E. Brill, New York.
64 Value of Immunized Milk as Prophylactic and Remedy for Tuberculosis. J. Rosenberg, New York.
65 Results of Salvarsan and Mercury in Eighteen Cases of Primary Syphilis. J. Constas, Washington, D. C.
66 Suction Tongue Depressor. N. E. Titus, New York.

63. Abstracted in THE JOURNAL, November 27, p. 1945.

Missouri State Medical Association Journal, St. Louis

November, XII, No. 11, pp. 475-516

67 Intra-Ocular Sarcoma; Report of Four Cases. J. H. Thompson, Kansas City.
68 Congenital Aphakia. J. W. Sherer, Kansas City.
69 Peripheral Vasomotor Changes in Shock. W. E. Muns, Columbia.
70 Some Types of Myocardial Disease. F. Fahlen, St. Louis.
71 Bone Regeneration. G. A. Beedle, Kansas City.
72 Diseases of Verumontanum. L. Bartels, St. Louis.
73 Practical Sterilizing Pocket Thermometer Case. O. H. Brown, St. Louis.

New Mexico Medical Journal, Las Cruces

November, XV, No. 2, pp. 41-84

74 Gastric Symptoms in Relation to Abdominal Disease. W. Senger, Pueblo, Colo.
75 Inguinal Hernia. R. W. Corwin, Pueblo, Colo.
76 Spontaneous Rupture of Hydronephrosis. K. D. Lynch, El Paso, Texas.
77 Modern Treatment of Fractures. J. R. Espey, Trinidad, Colo.

New York Medical Journal

November 27, CII, No. 22, pp. 1073-1120

78 *Sanitary Study of Condensed Milk. W. H. Park, M. C. Schroeder and P. Bartholow, New York.
79 Climatic Inducements for Overmature and Early Senescent. J. M. Taylor, Philadelphia.
80 Modern Infant Feeding. G. D. Scott, New York.
81 Enlargement of Thymus; Report of Case. J. Grossman, New York.
82 Atrophic Rhinitis. W. Ferguson, New York.
83 Hematuria in Renal Neoplasm. C. Denaclara, Palau, France.
84 Nonsurgical Treatment of Exophthalmic Goiter. I. Bram, Philadelphia.
85 Chronic Constipation in Infants. J. Epstein, New York.

78. **Sanitary Study of Condensed Milk.**—The authors summarize the results of their studies as follows: The value of sweetened condensed milk depends on the care and cleanliness used in manufacture. There is a want of evidence that the bacteria or chemical constituents are capable of affecting the health. Only the use of the best quality of sweetened condensed milk is to be commended in the feeding of infants. Sweetened condensed milk, when carefully prepared from whole milk, has special indications as an infant food. They may be thus expressed: Many infants are unable to digest the fat of cow's milk, even when two or three volumes of water are added. In such cases the half digested curds of casein are vomited. The change in these circumstances to sweetened condensed milk allays the vomiting. These facts are well established clinically. Sweetened condensed milk has generally a constipating effect. The opposite view that it produces diarrhea seems to be wanting in evidence. Clinical evidence agrees with Finkelstein's observation that the intestinal irritation caused by milk is an effect of the action of the liquid portion, when freed of fat, sugar, and protein. Sugar appears to have a food value superior to fat, as shown by Hellesen.

West Virginia Medical Journal, Wheeling

November, X, No. 5, pp. 145-180

86 Uterine Displacements with Special Reference to Prolapse of Uterus and Vaginal Walls. A. P. Butt, Davis.
87 Valvular Lesions of Heart; Diagnosis, Prognosis and Treatment. S. D. Hatfield, Iaeger.
88 Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. R. U. Drinkard, Wheeling.
89 Relation of Pathologic Tonsil to Systemic Infection. C. E. Grimm, St. Marys.
90 Treatment of Wounds of Mine Injuries and Sanitation of Mining Camps. W. A. Lynott, Pittsburgh.
91 Pericolic Membranes; Etiology, Diagnosis and Treatment. T. K. Oates, Martinsburg.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

September 25, II, No. 2856, pp. 461-492

1 Surgery on Gallipoli Peninsula. J. Morley.
2 Three Cases of Gunshot Wounds of Large Arteries, with Traumatic Aneurysm. J. A. C. Macewen.
3 Treatment of Wounds in War. E. G. Kennedy.
4 Recrudescence of Local Sepsis in Completely Healed Wounds. C. J. Bond.
5 Trench Nephritis; Report of Five Cases. N. Raw.
6 Artificial Pneumothorax. F. C. Coley.
7 Case of Rotatory Nystagmus with Recovery Under Optical Treatment. T. S. Barrie.

November 13, II, No. 2863, pp. 697-736

8 *Clinical Aspects and Diagnosis of Paratyphoid. J. A. Torrens and T. H. Whittington.
9 Bacteriologic Experiences with Typhoidal Disease and Dysentery. J. C. G. Ledingham and W. J. Penfold.
10 *Tetravaccine; Typhoid Plus Paratyphoid A Plus Paratyphoid B Plus Cholera. A. Castellani and R. W. Mendelson.
11 Paratyphoid "A" Fever. A. H. Safford.
12 Emetine Treatment of Amebic Dysentery. G. C. Low.
13 Case of Septicemia Treated by Intravenous Injection of Eusol. J. L. Smith, J. Ritchie and T. Rettie.
14 Wound Infections and Their Treatment. A. E. Wright.

8. **Diagnosis of Paratyphoid.**—Torrens and Whittington found that there are eight symptoms which occur in at at least 20 per cent. of the cases at the onset. In order of frequency these are: 1. Headache (85 per cent.). 2. Diarrhea (55 per cent.). 3. Abdominal pain (35 per cent.). 4. Aching pains in the limbs (30 per cent.). 5. Shivering (25 per cent.). 6. Extreme general weakness (25 per cent.). 7. Backache (25 per cent.). 8. Epistaxis (20 per cent.). Headache is usually vertical in distribution, though a migrainous type, especially severe behind the eyes, has been present in several cases of para A. Abdominal pain is rarely severe or colicky and is usually generalized, and does not often last more than two or three days. The initial diarrhea is rarely severe, being usually limited to three or four loose stools per diem. Pain other than abdominal pain or headache is usually referred to the back or limbs. Extreme general weakness is often sudden in its onset, and sometimes this and headache are the only symptoms. Epistaxis is rarely volunteered by the patient as one of his symptoms. While shivering is liable to occur in the course of any infection with the liberation of toxins or bacteria into the blood stream, yet the occurrence of repeated shivering attacks seems of special significance of the onset of paratyphoid. This is especially true of paratyphoid A, in which onset, and in which it is liable to occur with rigors throughout the disease.

Cough is complained of in nearly 20 per cent. of the cases, and seems more common in para B, but is rarely troublesome. Vomiting is far more common in paratyphoid than in typhoid. This is especially so in para B cases, in which vomiting occurred in 17 per cent. Dizziness and deafness

occurred in 7 per cent. of all cases. Sore throat or hoarse voice as evidence of laryngitis or pharyngitis occurred only in 5 per cent. of the cases, all those being cases of para B. Temperature during the onset. Patients in whom the onset was rapid have said that their temperatures were 102 to 103 when first taken. Cases which have started in a hospital in which the patient was being treated for some wound, and in which the temperature was being taken as a routine measure, show a rapid rise, the maximum usually being reached in forty-eight hours. It seems fairly certain that the "step-ladder" rise so frequently seen in typhoid is far from common in paratyphoid. During the second week, in the average patient, the temperature ranges between 99.2 and 102.4. Of the cases analyzed 60 per cent. showed this remittent type of fever, while about 20 per cent. were intermittent. A really steady temperature in the second week was only seen in 5 per cent. of the cases; 70 per cent. of all cases of para B and 40 per cent. of para A are of twenty days' duration or less. In about 30 per cent. of all cases of each form the pyrexia lasts fifteen days or less. In the average case the temperature in the second week and at the beginning of the third week does not reach as high as 103. Only about 35 per cent. of all cases of paratyphoid ever reach 103, and only about 12 per cent. reach as high as 104.

The pulse is one of the most important aids in diagnosis. The rate is uniformly slow as compared with the temperature. A temperature of 102.5 with a pulse of 70 is characteristic and is more than significant of a group infection. Without any apparent change in the general condition, the rate may be at one time 65 and at another 85 or 90, and, curiously, a high temperature may coincide with a low pulse rate and vice versa. The quality of the pulse is characteristic and important. There is a most marked softness or compressibility present. The blood pressure in a small series of cases examined with the sphygmomanometer was found to vary from 80 to 100 mm. Hg. Spots are present in as many as 75 per cent. of all cases at some time during the disease. They appear in crops, and last three or four days, as in typhoid. The spleen is either palpable or enlarged to percussion in nearly 60 per cent. of cases; it can be felt in about 35 per cent. of all cases some time during the course of the disease. Examination of the heart is negative. Examination of the lungs will show bronchitis in less than 30 per cent. of the cases. The central nervous system shows no constant abnormality.

10. **Typhoid Plus Paratyphoid A Plus Paratyphoid B Plus Cholera.**—The number of individuals inoculated by Castellani and Mendelson with the tetravaccine amounts to 50,000 and more than 120,000 by colleagues. The reactions were usually mild and consisted usually of a small area of redness, a slight local temperature and some tenderness. General reactions were seldom complained of, and when inquired into revealed a slight headache and a general inaptitude. These particulars were carefully looked into in all cases on the second inoculation. The left arm is chosen, the skin over the insertion of the deltoid, and a quick stab, as though one were shaking a drop of ink from a pen, results in placing the point of the needle at the exact depth. The syringe is held in the right hand between thumb and index finger, while the tip of the ring finger is placed just above the point of the needle, acting as a check to the force applied. No after-treatment, as massage or sealing the puncture, is used.

The authors examined the blood of more than 100 individuals inoculated with the tetravaccine for agglutinins. The individuals inoculated with the tetravaccine produce a large amount of agglutinins for typhoid, a fairly large amount of agglutinins for paratyphoid A and paratyphoid B, a certain amount for cholera, which varies between the limits 1:20 and 1:150. Comparing the results with those obtained in control individuals inoculated with typhoid, paratyphoid A, paratyphoid B and cholera, the amount produced is not distinctly smaller. There was no septic or other accident in any of the more than 50,000 men the authors have inoculated, this entailing more than 100,000 injections, nor any untoward accident observed by colleagues who inoculated in Serbia more than 120,000 men with the tetravaccine. The inoculated persons develop protective substances for the four germs: typhoid, paratyphoid A, paratyphoid B and cholera.

Lancet, London

November 13, II, No. 4811, pp. 1063-1120

15 Wound Infections and Their Treatment. A. E. Wright.
16 *Nervous Affections of Sixth and Seventh Decades of Life. J. M. Clarke.
17 *Gunshot Injuries of Peripheral Nerves. W. Harris.
18 *Gunshot Injuries to Peripheral Nerves. R. H. J. Swan.
19 Cases of Tetanus-Like Spasm Localized to Wounded Limb. R. D. Rudolf.
20 Case of Oral Sepsis. A. Abrahams.
21 Zinc in Potable Water. J. C. Thresh.

16. **Nervous Affections.**—Turning to those affections more purely of nervous origin, Clarke says that the period from 50 to 70 compares favorably with that of either childhood and adolescence or the age from 25 to 50. In both the latter periods of life falls the incidence of the nervous diseases due to infections and intoxications from which the age after 50 is mostly exempt. The main period of onset of the hereditary and familial diseases, those included under Gowers' designation of abiotrophy, occurs in childhood and adolescence, while from 20 to 50, together with some tabiotrophic diseases whose onset is late, the nervous affections due to syphilis and alcohol are rife. After 50 the chances of the occurrence of cerebrospinal syphilis are comparatively slight. Lastly, the purely nervous diseases which are especially characteristic of this period of life are paralysis agitans, some of the combined scleroses of the spinal cord and certain muscular atrophies of central origin. Clarke suggests that it is possible that some of these affections owe their origin to that process of premature senescence or defective vital endurance of certain neuronic systems known as abiotrophy, and that this pathologic process may occur at any age. Paralysis agitans especially, in its narrow age incidence, uniformity of symptoms, progressive character and occasional familial tendency, suggests this mode of origin.

17. **Gunshot Injuries of Peripheral Nerves.**—The following is a summary of the points made by Harris: The importance of an accurate history of the details of the wound or wounds, and of the immediate effects. A careful and methodical examination of the paralysis, both motor and sensory, is necessary to determine whether it matches with the known anatomic distribution of one or more nerves, or of a portion of a plexus, or whether it resembles the phenomena produced in hysteria. Careful charts of the sensory loss are more important than the presence of complete muscular paralysis, with reaction of degeneration, in estimating the severity of the injury of a mixed nerve. The various stimuli used in testing by hard or light pressure, pin-prick, scratch, camel-hair brush or cottonwool, are tests of different system or fibers. Hard pressure will still be perceived except in total interruption of the nerve conductivity by actual division or by its inclusion in dense scar. Commencing recovery of sensation may in some cases be observed within a few days only of secondary suture of the nerve. Variations, however, in the sensibility must be allowed for, as this may vary from day to day within narrow limits, or according as the limb is warm or cold.

18. **Gunshot Injuries to Peripheral Nerves.**—Swan has seen 63 cases of gunshot injury to peripheral nerves. Of these cases, 38 were operated on, involving the exploration of 41 individual nerves, for in 3 cases the injury involved two distinct nerves. Of the 25 patients not operated on, 6 refused any operative treatment for conditions in which it was practically certain that a nerve was badly injured; in 3 it was deemed inadvisable to attempt any operation; and in 4 cases operation has been deferred until such time as the wounds made by the bullet have healed. In the remaining 12 patients gradual improvement and recovery to function returned after an interval varying from two to twenty-four weeks after the injury. Swan says that unless the symptoms point to a partial injury to the nerve he knows of no point to distinguish between complete nerve division and involvement in dense scar tissue. He has operated on cases in

which there have been complete anesthesia and paralysis of the muscles supplied by the nerve and with complete reaction of degeneration, but in which he found the nerve undivided, but densely fixed by scar tissue to surrounding structures. The anatomic lesion is of small moment, however, as operative treatment is required in either case, and the sooner it is done when asepsis can be guaranteed the better the prognosis for the patient. In cases of complete nerve division there is no question of the procedure to adopt —the ends must be dissected free, the bulbous proximal end removed until nerve bundles can be seen, a small part of the distal end resected, and the two ends accurately joined, tension on the nerve being relieved by stretching the nerve and by suitable position of the limb. In cases in which the nerve is firmly involved in scar tissue, and which on dissection is found to be dense and thickened, the best thing to do, if nerve will allow, is to resect the fibrous portion and join the two ends by accurate suture.

Bulletin de l'Académie de Médecine, Paris

October 19, LXXIV, No. 42, pp. 429-463

22 *Diagnostic Importance of the Modifications in the Tendon Reflexes Under the Influence of Chloroform. J. Babinski and A. Frémont.
23 The Children Born from Rape. (Le viol de guerre et la protection de l'enfance.) H. Henrot.
24 *Intubation to Maintain the Circulation in Wounded Artery. (De l'intubation dans les plaies des grosses artères.) T. Tuffier.
25 Bacteriologic Examination of Beer. (Les bières des Flandres.) L. Roussel and Others.

22. **Differential Importance of Modification of Reflexes by Chloroform.**—Babinski says that the works published on this subject to date discuss merely the physiologic behavior of the reflexes under the influence of chloroform. He and his co-worker, on the other hand, present evidence to show that the behavior of the reflexes has differential importance in abnormal conditions. It affords an objective means of distinguishing between actual nervous disease and hysteria, for one thing, and between different forms of nervous disease. In six wounded soldiers whose cases are described in detail, the asymmetric accentuation of the reflexes, their asymmetric disappearance and asymmetric reappearance, confirmed the assumption of organic disturbance. The survival of the elective exaggeration of the tendon reflexes, even during the phase of relaxation of the muscles, reveals the extent of the disturbance in the central nervous system resulting from the peripheral lesion. It explains the tenacity of the disturbance and its clinical importance, justifying the patient's complaints and the functional disturbances, when otherwise there might be suspicion of malingering.

24. Summarized in the Paris Letter, November 27, p. 1929.

Paris Médical

September 11, V, No. 18, pp. 305-320

26 The Triple Vaccine for Typhoid Fever. A. Chantemesse.
27 Extension for Fractured Humerus. R. Grégoire.
28 Service for Dentistry and Protheses for the Active Army. (Stomatologie aux armées.) Gaumerais.
29 Gage for the Excursions of Joints. (Le compas d'angle destiné à mesurer le degré d'extension et de flexion des articulations.) P. Guillaumet.
30 Improvised Douche Apparatus. L. Binet.

September 18, No. 19, pp. 321-336

31 *Decalcification of Bones in Paralyzed Members, Both Organic and Neuropathic. H. Claude and R. Porak.
32 Treatment of Suppurating Wounds in War. J. Andrieu.
33 Simplified Stereoroentgenography. B. de Laborie.

September 25, Nos. 20-21, pp. 337-372

34 *Wounds of the Eyes and Orbit in War. F. Terrien.
35 Inferior Hemianopsia from Projectile in Left Lower Side of the Occiput. E. Ginestous and P. Bernard.
36 War Wounds of Larynx and Trachea. Guisez.
37 The Ear and Traumatisms of War. (Appareil auditif et traumatisme de guerre.) M. Grivot.

31. **Decalcification of Bones in Paralysis.**—A number of typical cases are described and illustrated. The findings are tabulated in 15 cases of paralysis of the hand without any signs of neuritis, also in 4 of paralysis from a direct wound of the brachial plexus, 3 of the ulnar, 4 of the median, 2 of the radial and 2 involving both ulnar and median nerves. Decalcification was evident in all the groups, and hence it cannot be regarded as a sign of a lesion of any nerve, as it was often as pronounced in the neuropathic and hysteric cases or after immobilization for fracture as when the nerve had been severed. The latter alone may entail osteoporosis, but it is equally liable to develop from the lack of exercise during immobilization, from disturbances in the circulation in the region, or from a constitutional predisposition. It occurs in the same way as wasting of muscles or local sweating or hyperkeratosis in cases of disuse of a member from any neuropathic or organic cause.

34. **Injuries of the Eyes in War.**—Terrien discusses the direct injury of the eyeball or orbit or both from projectiles, indirect injury from a wound near or from the shock of an explosion without direct injury of the tissues, and, finally, visual disturbances of psychic origin. A number of illustrations are given to illustrate technical points in repair. In one of the cases illustrated a flap was taken from the thigh to make a new culdesac, permitting the wearing of an artificial eye. In some cases men knocked down by an explosion, without direct injury, were totally blind when they regained consciousness and some could not hear and others had aphasia. In others both vision and hearing were slightly impaired. He has encountered eighteen cases of these visual disturbances. Vision began soon to improve and gradually returned to its former status except for some slight reduction of visual acuity and difficulty in focussing objects. The immediate blindness is evidently the consequence of the concussion from the explosion and conditions progressively right themselves. When the disturbances drag along without tendency to improve, a psychoneurosis may be assumed and treatment instituted on this basis.

Revue Médicale de la Suisse Romande, Geneva

October, XXXV, No. 10, pp. 533-604

38 Supplementary Measures to Improve the Condition of the Wounded. (Le traitement complementaire des blessures de guerre et les services de physiothérapie.) Long.
39 *Joint Manifestations of Hemophilia. (De l'arthropathie hémophilique.) C. M. Du Pan.
40 Wounds of the Spine. (Des lésions vertébrales dans la chirurgie de guerre.) A. Jentzer.
41 Favorable Experiences with Heliotherapy for Pulmonary Tuberculosis. Meyer.
42 Enterogenous Albuminuria in Pregnant Woman. D. Christidès and P. Besse.

39. **Hemophilic Joint Affections.**—Du Pan relates that a boy of 15 was brought to the hospital on account of a very painful tumor of the ankle which seemed to be a sarcoma on the point of ulcerating, except that sarcomas are not so agonizingly painful. The tibia was not tender, and although there were local heat and fever, yet there was no involvement of glands, no lymphangitis or fluctuation. A small incision brought dark blood but no pus, and the little cut bled continuously for three days, confirming the final assumption of hemophilia. Under calcium chlorid and diphtheria antitoxin the oozing of blood was finally arrested. His family showed the usual skipping of the second generation and reappearance of the hemophilia in the sons of the daughters, three of the five sons being pronounced hemophiliacs.

In treatment, the main thing is to suspect the hemophilia instead of taking the joint trouble for acute articular rheumatism or a tuberculous process, as is too often done. Du Pan declares that this error in diagnosis has often proved fatal; he cites various cases in which puncture of the joint for supposed hydrarthrosis has caused bleeding to death. In Poncet's case, the fatal hemorrhage followed application of the actual cautery at several points. König has reported two cases with fatal outcome after resection of the knee, and the list is a long one of these sad blunders in diagnosis.

The blood accumulating in the joint causes sudden pain and swelling and the limb is held as in acute rheumatism. The region feels hot and there may be fever, but the skin keeps its normal color throughout the whole trouble. There are, as a rule, several successive attacks involving different joints, but mostly the knee or elbow, one at a time, with

or without some slight local trauma preceding. The hemarthrosis may be entirely absorbed, but usually it persists and irritates the joint, with chronic arthritis as the result. In the second phase this arthritis resembles in every respect a white swelling; there is thickening of the synovialis, impotence of the limb and wasting of muscle. The pain is less in this stage; the swelling becomes more general, and the culdesacs are distended, but the local heat does not increase. There is elastic fluctuation in the synovial culdesacs, as with a tuberculous process, and partial ankylosis develops. After the inflammation has subsided, insidious destruction may continue; but there is never an abscess or fistula and never any enlargement of glands from hemophilia alone. The sudden onset excludes malignant disease, but hematomas in muscle may be taken for cold abscesses and incision lead to fatal hemorrhage. Submucosa hemorrhages in pharynx and glottis in a second case reported were mistaken for Ludwig's angina or diphtheria. In Du Pan's first case, a subperiosteal hemorrhage, the length of the thigh had been mistaken for phlebitis. Hemophilic hemorrhage in the stomach has often been treated as for a bleeding ulcer, and, from the lungs, for pulmonary tuberculosis.

The family antecedents and tests of the coagulating power of the blood will reveal the tendency to hemophilia. Its first manifestations generally appear before the age of 2, and the hemophiliacs generally outgrow the tendency by 22. It very rarely happens that a hemophiliac succumbs to hemorrhage after 22. The most threatening hemorrhages are generally during teething or puberty. Fatal epistaxis carries off fully 50 per cent. of the hemophiliacs. Others have succumbed to hemorrhage from the gums, lungs, kidneys, etc.; two brothers died from conjunctival hemorrhage. The skin covering a hematoma is stretched, shiny, and bluish or black, with a peripheral red zone. These hematomas never suppurate, but the blood coagulated in them may undergo calcareous infiltration. The literature on hemophilia and theories as to its mechanism are discussed in detail.

Horse serum to date has proved more effectual than anything else in treatment of hemophilia, but its action is only transient. Keller found that the coagulation of the blood in women did not seem to be affected by removal of both ovaries, so that the lack of ovarian secretion cannot be the primary cause of hemophilia. Ovarian treatment has been tried, but with no appreciable results. With a recent hemarthrosis, immobilization and compression with a cotton pad protect the joint and favor absorption. When the coagulating time has been reduced by general treatment, it may be possible to incise and remove the clots distending the joint and thus ward off chronic arthritis. In the chronic stage we are disarmed. No one is justified in operating to correct deformity or ankylosis in a hemophiliac unless he has reached adult age, and it has been ascertained that the blood coagulates in an approximately normal manner. In hemophiliac families the children should not have their teeth pulled, but vaccination has never been known to bring on hemorrhage. The hemophiliac should select a sedentary occupation.

Correspondenz-Blatt für Schweizer Aerzte, Basel

October 30, XLV, No. 44, pp. 1377-1408

43 *Prevalence of Atherosclerosis. S. Saltykow.
44 The Experiences at Bern with Salvarsan to Date. (Unsere Erfahrungen mit Salvarsan.) O. Nageli. Commenced in No. 42.

43. **Prevalence of Atherosclerosis.**—Saltykow accepts as evidence of atherosclerosis even the minutest yellow patches visible on the heart valves or intima of the arteries. He has been searching for them at necropsies, and reports that he found them in 77.5 per cent. of the total 1,200 cadavers examined. Excluding all infants less than 3 months old, the proportion was 91.5 per cent. Above the age of 8 every cadaver presented evidence of atherosclerosis to a greater or less extent.

Deutsche medizinische Wochenschrift, Berlin

October 28, XLI, No. 44, pp. 1297-1324

45 Hunger. (Ueber die Hungerempfindung.) L. R. Müller.
46 Combined Treatment of Syphilis. (Ueber Salvarsannatrium und die kombinierte Quecksilbersalvarsanbehandlung.) E. Hoffmann.
47 Bacteriologic Diagnosis of Cholera. (Die bakteriologische Choleradiagnose, unter bes. Berücksichtigung der von Aronson und Lange neuerdings angegebenen Choleranährböden.) E. Bötticher.
48 *Appearance of Immature Leukocytes in the Blood in Infectious Diseases. (Auftreten unreifer Leukozyten im Blut bei Infektionskrankheiten.) B. Photakis. To be continued.
49 Chronic Pancreatitis. M. Einhorn. To be concluded.
50 *Alcoholic Polyneuritis with Paralysis of Left Side of Diaphragm and Left Vocal Cord. W. Löffler.
51 *Exposure to Tuberculosis in Childhood as Factor in Tuberculosis Later. (Ueber die Gefährdung von Kindern durch tuberkulose Ansteckung.) E. Bergman.
52 Practical Experiences with Fürstenau's Intensimeter. F. M. Meyer.
53 *"Scrofula" in Adults. (Zur Skrofulosefrage.) A. Bauer.

48. **The Appearance of Immature Leukocytes in the Blood.**—Photakis tabulates the blood findings in thirty-two cases of various acute infectious diseases to call attention to the importance for the prognosis of the appearance of immature leukocytes in the blood. He found the immature forms numerous in five eighths of his cases, and these were all the severer ones. This finding shows the toxic action on the bone marrow of the infectious agent, and thus serves more or less as an index of the intensity of the intoxication. The irritation of the bone marrow is manifested first by a neutrophil leukocytosis without immature forms; then metamyelocytes appear; then, along with them, appear myelocytes and promyelocytes, indicating the progressive phases of the irritation. In the severer infections, especially with sepsis, all the immature forms are encountered, down to myeloblasts as in the leukemic blood picture. The internal nuclear structure of the immature cells takes the stain differently from ripe cells; it is amblychromatic instead of the trachychromatic structure of the nucleus of the maturer cells. By the response to Pappenheim's staining technic (May—Grünwald—Giemsa) it is possible to differentiate each cell according to its age and maturity, and thus estimate to a certain degree the severity of the infection.

50. **Alcoholic Polyneuritis.**—The neuritis was accompanied with paralysis of the diaphragm and vocal cord on left side. The patient was a robust hotel-keeper of 29, and the nerves affected with paralysis were those which run along together in the neck on the left side. Nothing could be found to explain this localized paralysis except alcoholism; the attenuation of the reflexes and the reaction of degeneration indicated a peripheral nervous trouble. The paralysis of the phrenic nerve rapidly subsided. The diaphragm was soon working properly, but the paralysis of the left vocal cord, radial and peroneal nerves persisted for some time, but finally all retrogressed to a complete cure, except that there is still some slight paresis of both peroneal nerves. This prompt recovery is of special interest as, usually, polyneuritis involving the vagus and phrenic nerves is considered very dangerous on account of the danger of fatal arrest of respiration.

51. This article was summarized recently, November 6, page 1686, when it appeared in a Scandinavian journal.

53. **"Scrofula" in Adults.**—Bauer protests that the clinical picture which used to be called "scrofula" is by no means restricted to children. It occurs comparatively often in adults, but unfortunately it is seldom diagnosed, and it fails to get proper treatment. He has encountered adults with the typical cheesy glands in the neck and eczematous conjunctivitis, who were past 50 and had never had their lungs examined. Knowledge of the possibility of scrofula in adults is especially important for lung specialists. He refers in particular to the article by Schellde, on "scrofula," reviewed in these columns, page 1683, abstract 71, which makes no mention of scrofula in adults.

Münchener medizinische Wochenschrift, Munich

October 26, LXII, No. 43, pp. 1453-1488

54 *Treatment of Weak Vision in One Eye. (Ueber Behandlung einseitiger Schwachsichtigkeit.) L. Heine.
55 Development of Organs in Response to Work Demanded of Them. (Zur Frage: Arbeitsleistung und Organentwicklung.) F. Kullis.
56 Neosalvarsan in Treatment of Tertian Malaria. A. H. Vandenhoff.
57 Artificial Sheath for Nerves after Suture and Neurolyses. (Galalith zur Tubulisation der Nerven nach Neurolysen und Nervennähten.) S. Auerbach.

58 Nitra Lamp for Radiotherapy. H. L. Heusner.
59 Hygiene in the Camps of Prisoners of War. (Hygienische Erfahrungen bei Kriegsgefangenen.) G. Seiffert.
60 *Public Assistance for the Poor and Repression of Drunkenness. (Armengesetz und Trunksuchtsbekämpfung.) Rupprecht.
61 Open Puncture of the Pleura. (Einige Bemerkungen zur "offenen Pleurapunktion" nach Adolf Schmidt.) L. Spengler.
62 Gunshot and Shell Wounds of Spine and Spinal Cord. (Schussverletzungen des Rückenmarks und der Wirbelsäule.) P. Frangenheim.
63 Abscess of the Brain. (Zur Therapie des Hirnabszesses.) P. Manasse.
64 Plastic Operation on the Dura after Grazing Wound of the Skull. (Duraplastik bei Rinnenschuss am Schadel.) E. Streissler.
65 *Encephalolysis for Traumatic Epilepsy and Headache. O. Witzel.
66 Fitness for Military Service of Men with Heart Disease. (Zur Beurteilung der Kriegsverwendungsfähigkeit unserer Herzkranken.) F. Adolph.
67 Immediate Emergency Removal of Injured Eye. (Ueber Enukleation und Exenteration verletzter Augen im Felde.) R. Deutschmann.
68 *Management of Operative Infection. (Finger- und Handinfektion bei Aerzten.) L. Heidenhain.
69 Amputation Stumps and Immediate Protheses. K. Nieny.

54. **To Strengthen Unilateral Weak Vision.**—Heine relates that a reliable and intelligent man, now 57, as a child could read only the headings in the newspaper with one of his eyes. The other eye was apparently normal, and he found that he could see better with the weak eye by looking through his partly closed fist. By systematically exercising the eye in this way, vision materially improved and the benefit was permanent. Bandaging the better eye for a few hours each day is also liable to strengthen the weak vision in one eye; Heine has witnessed the transformation of unilateral strabismus into the alternating form in children. In one boy of 8 tenotomy was done on the right eye for convergent squint. Vision in this eye had been $\frac{1}{30}$, but in a week it was $\frac{1}{4}$, and in another fortnight nearly normal, but in binocular vision it was still defective. In a large number of cases of supposed congenital weakness of vision in one eye, he found that the eye could see better through a narrow opening or slit. In many the visual acuity increased from $\frac{6}{36}$ to $\frac{6}{18}$ by the use of the slit, and he thinks that systematic exercises of this kind might yield material benefit. The stenopaeic hole or slit may help more than the best glasses, especially with congenital amblyopia. He relates a few typical cases and expatiates on various technical points to bear in mind.

65. **Adhesion of Nerve or Brain to Cicatrix Factor in Neuralgia and Traumatic Epilepsy.**—Witzel long ago pointed out that the agonizing neuralgia after amputation was due to cicatricial incarceration of the end of the nerve. The nerve should be divided high enough up to prevent this being possible. His experience with wounds of the skull shows similar conditions here, the cicatricial tissue grows to the brain and induces traumatic epilepsy or headache. This can be avoided or cured by separating the brain tissue and pushing it down, cutting out the cicatricial tissue at the site of the wound, and introducing a flap of fat under the dura as a cover to protect the brain. He gives three illustrations of the exact technic. The surface of the brain is smoothed off, but without extensive extirpation of the cicatricial tissue. The flap of fat is taken from the thigh and it is cut twice as large as the gap in the skull, so it can be pushed far back under the skull all around, between the brain and the dura. The fat side is turned toward the brain, the fascia side upward. No attempt is made to fill the gap in the skull by a plastic operation; in fact, this would militate against the success of the encephalolysis.

68. **An Imperative Warning to Physicians and Surgeons.**—Heidenhain relates that from his student days he has always heeded Billroth's warning that in case of an operative infection the poison is much less apt to spread if the limb is kept perfectly still. He has cut and scratched himself at operations numbers of times in the course of his long practice, but has never had any ill effects from them, as he has always made a point of wearing the arm in a sling for twenty-four or forty-eight hours, with a small moist compress over the wound to keep it from sticking. He always gave up all work during this time and had others help him to dress and undress, and even help to feed him. He escaped all ill effects so constantly that he began to think he was immune. Not many years ago he dressed a small operative cut on the hand of a young pathologist and tried to impress on him the necessity of refraining to use his arm for two days. Heidenhain then left town for a week; on his return he learned that the young man was dead. He had worn the sling for half a day and then had gone swimming. A chill that night was followed by fatal sepsis.

Heidenhain's recent experience has confirmed him still more irrevocably in his conviction of the imperative necessity for absolute repose for the limb in these cases. He cut his middle finger a trifle in operating an empyema. The cut did not go below the papillary layer of the skin and he kept his hand in a sling in going his rounds, but that evening, pressed with work, he used the typewriter for an hour. The spot became painful then and the next morning a subcutaneous phlegmon developed, requiring extensive incisions, and three weeks elapsed before it healed and three more before function was regained. His many years of freedom while he kept the injured limb still, and his serious trouble the one time he failed to keep it still, testify to the soundness of Billroth's advice to keep the limb immovable for two days.

Therapeutische Monatshefte, Berlin

October, XXIX, No. 10, pp. 533-588

70 Cholera. G. L. Dreyfus.
71 Present Status of Treatment of Pneumonia. A. Fraenkel.
72 Thorium X in Treatment of Certain Skin Diseases. J. Jadassohn.
73 Hydrochloric Acid and Charcoal in Treatment of Gastrogenous Diarrhea. O. Porges.
74 An Arsenical-Alkaline Mineral Water in Treatment of Children. (Erfahrungen über den therapeutischen Wert der Guberquelle bei Kindern.) M. L. Mayerhofer and O. Schey.
75 Salicylic Acid in Treatment of Suppurative Affections of the Skin. (Die Behandlung der Furunkel und anderer eitriger Hauterkrankungen mit Salizylsäure.) H. Berkenbusch.
76 *Restrictions on Advertising of Proprietaries to the Public. (Oeffentliche Ankundigung von Arzneimitteln.) (Editorial.)
77 *The Manufacturing Chemists and the Medical Profession. (Pharmazeutische Industrie und Aerztestand.) (Editorial.)
78 Pharmacist Protests against Restrictions on the Dispensing of Certain Potent Drugs without a Prescription. (Die Vorschriften über die Abgabe starkwirkender Arzneimittel.) (Editorial.)

76. **Restrictions as to Advertising of Proprietaries.**—The military authorities in the state of Hannover have issued a decree along much the same lines as our Pure Food and Drugs Act, so far as the advertising is concerned. Our exchange quotes the decree with approval and then also asks why such a decree is promulgated and enforced only while the state is under martial law. Each of the provisions, it emphasizes, is fully as much to the advantage of the public health during peace as during war times.

77. **The Manufacturing Chemists and the Medical Profession.**—Two advertisements which recently appeared in German newspapers are reproduced with the comment that they afford opportunity for congratulating the medical profession anew on the high opinion held by the manufacturing chemists of professional honor among physicians.

The first reads: "Physician Wanted. A remunerative and convenient country practice with sickness insurance societies is open in southern Hannover for immediate possession to young physician who gives the preference to the original preparations of manufacturing chemists" . . .

The second reads: "Physician Wanted. What physician, one with the title of professor preferred, will father a new pharmaceutical tested by physicians with good results? . . ."

Our exchange remarks that the fact that such demands can be publicly voiced suggests that there are in our ranks some black sheep who will stoop to dally with the sordid writers of the first advertisement, or father the child in the foisting procedure aimed at in the other.

Wiener klinische Wochenschrift, Vienna

October 21, XXVIII, No. 42, pp. 1129-1152

79 Wounds and Contusions of the Kidneys. (Kriegsverletzungen der Niere.) R. Lichtenstern.
80 *Vaccination against Dysentery. (Ruhrschutzimpfung.) K. Hever and F. Lucksch.

81 *Carbohydrate Fermentation in Stomach with Normal Motor Function. (Gibt es eine Kohlehydratgarung im motorisch intakten Magen?) P. Saxl.
82 *Typhoid Gastritis. S. Plaschkes.
83 Wounds of Cranial Nerves. (Schussverletzungen der Hirnnerven.) O. Ausch.
84 Volvulus and Gangrene of Meckel's Diverticulum. R. Monti.
85 Adapting Farm Wagons for Carrying the Wounded. A. Weiss.

80. **Vaccination Against Dysentery.**—There was a mortality of 19.4 per cent. in the sixty-seven cases of dysentery in a small town, all in about one month. Then all the sick were sent to a special hospital. Search was made for carriers in the infected houses and several were found and sent away also. All the adults left were inoculated with a polyvalent vaccine, a total of 342 persons out of a population of 800. About 243 were inoculated twice. The reaction was always mild, generally merely a little local redness, swelling and painfulness. A few had headache, and there was diarrhea for a few days in some. In exceptional cases there was a little fever, with a chill, the day of the inoculation. The fifty-one children over 4 years old, in the infected houses, were all given an injection of polyvalent immune serum. The epidemic was promptly arrested.

82. **Typhoid Gastritis.**—Plaschkes examined the stomach content after a test breakfast in large numbers of soldiers with typhoid, restricting his research to those whose fever had subsided. He found evidences of severe gastritis with impairment of motor functioning and digestive power in all but 4. In only these 4 of the total 14 with pronounced gastritis was the acidity normal; in 3 there was no free acid and in 7 it was abnormally low. One had severe urticaria and all had abnormally large amounts of mucus. He examined the stomach content from numbers of other patients with dysentery or paratyphoid, finding conditions in regard to the acidity practically normal. There is reason to assume, therefore, he says, that the gastritis of typhoid is peculiar to this disease. Tests of typhoid bacilli in vitro showed that their proliferation was checked by gastric juice. On the other hand, the finding that the overwhelming majority of typhoid patients have a specific gastritis, persisting into convalescence, is surely an indication to supply such patients with the lacking acid, and the diet should be that given in other forms of gastritis, in small frequent meals. The rapid progress in his cases when food of this kind was given, with hydrochloric acid, confirms the practical importance of these views. They also suggest that infection does not necessarily always occur through the stomach. Typhoid preceded cholera in 44 cases recently reported by Walko, but no instance is known in which typhoid followed on cholera. In prophylaxis of cholera, therefore, the systematic giving of hydrochloric acid far into convalescence of typhoid may prove important.

Zentralblatt für Chirurgie, Leipzig

October 30, XLII, No. 44, pp. 785-800

86 Siphon Drainage of Stomach through Fistula in Conditions of Atony in Stomach and Intestines. (Die Magenfistel mit Heberdrainage.) H. Gross.

Zentralblatt für Gynäkologie, Leipzig

October 30, XXXIX, No. 44, pp. 763-778

87 *The Transperitoneal is the Preferable Technic for Cesarean Section. (Extraperitonealer oder transperitonealer Kaiserschnitt?) K. Baisch.

87. **Cesarean Section in the Cervix.**—Baisch relates that none of the eleven women whom he has delivered by extraperitoneal cesarean section behaved afterward as if there had been a laparotomy. There was no tendency to paralysis of the bowels. Recovery was amazingly simple and rapid in comparison to the convalescence after classic cesarean section. In a twelfth patient he renounced the extraperitoneal technic because the woman had been laparotomized twice, once for extra-uterine pregnancy and once for post-operative hernia. In another case sterilization had to be done. In both these cases the incision was low in the cervix, opening up the peritoneum widely. Recovery was simple and rapid in both, as also in the seventeen following cases of transperitoneal cervical cesarean section.

The incision, 10 cm. long, is made on the linea alba, through skin and peritoneum, and the uterus is opened on the median line in the thin and stretched lower segment. No attempt is made to separate the bladder, or to make the incision in the peritoneum transverse, or to loosen up the peritoneum. If necessary to tampon the uterus, after extraction of the child, the tampon is brought out through the vagina. No attempt is made to drain the abdominal cavity either through the abdominal wall or the vagina. The distended uterus holds the intestines out of the way so they do not present at all, and any fluids from the uterus are soaked up by two flat sponges wrapped in gauze compresses and worked down between the uterus and the abdominal walls. The incision in the uterus is reenforced double with peritoneum sutured over the uterus suture, and this is covered with omentum. This prevents any escape of uterus contents into the abdominal cavity. By making the incision in the uterus in the most stretched segment, the coaptation and suturing of the thin walls proceed with special ease, and during the involution of the organ there is no traction or pulling aside of the walls. The fold of peritoneum in that region is so voluminous that it can be laid in a double fold over the suture in the uterus wall; there is not such an excess of peritoneum in the fundus region, so this is impossible elsewhere. Conditions therefore permit as simple and rapid recovery as after the extraperitoneal technic.

Only thirteen of the total nineteen cases treated by this transperitoneal technic were "clean" cases. The others had been repeatedly examined by midwife or obstetrician, without gloves, and in several the membranes had ruptured twelve, twenty or twenty-four hours before. Two of the women were already slightly febrile and the fluids in the uterus were fetid. Labor had dragged along for days in many cases; in two primiparas of 40, seventy hours had elapsed since the birth process had begun, and with several others, thirty or forty hours had elapsed. In every instance the puerperium was normal in every particular, although the conditions were in many of the cases less favorable than in the extraperitoneal series. In the two febrile cases, perforation of the living child had even been contemplated. The children were all delivered alive but one died from an intracranial hemorrhage; the operation had evidently come too late in this case. No high forceps, prophylactic version, premature delivery or a pelvis enlarging operation was required in any of the cases. The operation was done on account of contracted pelvis, rigid birth passage in elderly primiparae, cicatricial atresia of the vagina, etc. Eight of the women were allowed to leave the clinic the tenth or eleventh day. The transperitoneal technic thus proved to have all the advantages of the extraperitoneal method and to surpass it in some respects.

Gazzetta degli Ospedali e delle Cliniche, Milan

October 27, XXXVI, No. 74, pp. 1153-1168

88 Localization of Metal Bodies in the Tissues with Electrovibrator. V. Maragliano.

Policlinico, Rome

October 31, XXII, No. 44, pp. 1469-1504

89 Acute Inflammation of the Liver. (Contributo clinico allo studio del cosidetto fegato infettivo acuto.) G. A. Pietri.
90 Treatment of Purulent Pleurisy. M. Mitra.

Riforma Medica, Naples

October 30, XXXI, No. 44, pp. 1205-1232

91 Treatment of Arrhythmias. III. (Terapia delle aritmie. Aritmie batmotrope; disordini di eccitabilita.) G. Rummo.
92 Leishmania Anemia; Two Cases. (Contributo clinico ed anatomo-patologico allo studio dell'anemia da Leishmania.) A. Fagiuoli. Commenced in No. 43.
93 Primary Perithelioma of Lymph Glands. G. D'Oria. To be continued.

Brazil-Medico, Rio de Janeiro

October 16, XXIX, No. 39, pp. 305-312

94 *Possible Mycotic Origin of Leukemia. (Pesquizas etiologicas na leucemia.) E. Dias.
95 Epidemic Cerebrospinal Meningitis. Travers, Jr.
96 Tuberculosis in Parturients. (Subsidio ao estudo da tuberculose na puerperalidade.) A. Farani. To be continued.

October 23, No. 40, pp. 313-320

97 Classification of Siphonaphtherus in Brazil. (Notas de syphonapterologia.) R. de A. Cunha.
98 Typhoidal Condition in Chronic Malaria. (Typhose palustre.) A. A. da Matta.

94. **Leukemia a Mycosis?**—Dias found what he calls a bacilliform germ with pronounced polymorphism in two cases of severe myeloid leukemia with extreme enlargement of the spleen. He succeeded in inducing in animals, inoculated with the germ, a progressive and peculiar splenomegaly with enlargement of glands. The facts observed suggest that the germ in question has some etiologic connection with the myeloid leukemia, suggesting a possible mycosis as the origin of the trouble. The whites numbered 100,000 and 244,000 in the two cases. The animals were inoculated with venous blood and with the products of punctures of the spleen. Other animals inoculated with spleen tissue from these also developed the same progressive enlargement of spleen and glands and other signs of septicemia.

Russkiy Vrach, Petrograd

XIV, No. 38, pp. 889-912

99 *The Action of Peptone on the Heart, Vessels and Blood Pressure. S. A. Pissemsky.
100 *Etiology of Multiple Neuritis. N. I. Leporsky.
101 *Serum Sickness at the Pediatric Clinic in Moscow, 1904-1913. O. I. Molchanova.
102 *Intestinal Digestion in Man after Excision of a Large Portion of Lower Intestine. N. A. Gurevich.
103 *Cholera and Amebic Dysentery. V. L. Yakimoff and A. P. Demidoff.
104 *Treatment of Sciatica with Rectal Saline Infusion by the Drop Method. N. A. Gubin.

99. **Action of Peptone on the Heart, Vessels and Blood Pressure.**—Pissemsky studied the action of peptone on the isolated heart, coronary vessels, peripheral arteries, and the vessels of the isolated intestines and kidneys of rabbits. He used mostly Witte's peptone, but also peptone prepared from albumin and blood. The substance was passed through the vessels in solutions of 1:200, 1:1,000 and 1:10,000. The latter two solutions caused weakening of cardiac contractions, while stronger solutions (1:200) stimulated the heart to contract, the cardiac rhythm remaining uninfluenced. Strong solutions (1:200) also produced marked dilatation of the coronary arteries. The same occurred, but was transient, with weaker solutions, or the weaker solutions showed no effect. The action of the peptone on the peripheral vessels was studied on rabbit's ears with the method of Kravkoff. The action was vasoconstricting with all concentrations and with any kind of peptone. However, the arteries of isolated intestines showed dilatation from large doses, but weak solutions had no effect. Somewhat similar was the action of peptone on the vessels of the isolated kidney. The blood pressure (0.5 gm. peptone to one kilogram body weight) either remained unchanged, or rose, contrary to what may be observed in dogs in which the same doses cause a fall in the blood pressure.

100. **Multiple Neuritis from Tapeworm.**—Leporsky collected from the material of the University clinic of Dorpat sixty-four cases of tapeworm *(Bothriocephalus latus)* observed in five years. Of these sixty-four cases, fifty-one showed more or less marked involvement of the nervous system in the form of polyneuritis, which in 14 per cent. of the cases was severe. He gives histories of three cases of polyneuritis in which no other explanation for the polyneuritis except this parasite could be found. With the expulsion of the worm there was immediate improvement. Leporsky is of the opinion that a toxin is formed in the intestines, whence it penetrates into the nervous system, causing various central and peripheral nerve disorders, such as chorea, epilepsy, neuralgia, and multiple neuritis. A polyneuritis of this etiology might be called "enterotoxic polyneuritis." Sometimes no definite nerve symptoms are produced, but merely general complaints of weakness, and of pain in the joints and muscles. These symptoms are usually taken for rheumatism, when they are in reality due to the presence of the tapeworm. With the expulsion of the latter these rheumatoid pains disappear at once.

101. **Serum Sickness and Allied Phenomena.**—Molchanova found so-called serum phenomena, such as urticaria, fever, adenitis, etc., in 56.7 per cent. of the patients given diphtheria antitoxin, and in 64.3 per cent. of those treated with antistreptococcus serum for scarlet fever. In those cases in which the antitoxin or serum for scarlet fever had been injected more than once, such phenomena were present in 100 per cent., but when the antitoxin was injected for the first time, complications were noted in 47.5 per cent. and in 59.6 per cent. in the scarlet fever cases. The first sign of the serum disease was swelling of a gland in the inguinal region, as the serum was usually injected in the abdominal skin or in the gluteal muscles. The adenitis very seldom appeared in the axilla or neck, and it was the latest of the serum phenomena to disappear. The most frequent sign, however, was a rash in the form of urticaria, erythema multiforme, measles-like, scarlatinaform or hemorrhagic. The latter was found in 2.2 per cent. after diphtheria antitoxin and in 10.4 per cent. after antistreptococcus serum injections.

Of other rarer complications, Molchanova mentions affections of the joints (arthralgia, synovitis), elevation of temperature and albuminuria (in 0.3 to 0.4 per cent. of the cases) and edema of the face, lids, upper lip, scrotum and prepuce. The edema was not associated with albuminuria, casts or increased blood pressure; rather was there a fall of the latter. A very disagreeable complication was gastro-intestinal disorders, vomiting, diarrhea and abdominal pain. In four cases only there occurred cardiac collapse, with one death. All these complications occurred usually from seven to twelve days after the injection of serum, or if the patient had had an injection some time before, the interval was from one to five days. Concentrated serum gave fewer complications. Calcium chlorid (2 per cent. solution, a teaspoonful three or four times daily) did not prevent occurrence of complications. The anti-anaphylactic method of Besredka was used in fifteen patients (2 c.c. of antitoxin was injected intramuscularly, followed two or three hours later by the curative dose hypodermically or intramuscularly), but it did not prevent complications. The latter were rather mild, however, and hence Molchanova warmly recommends this method.

102. **Intestinal Digestion in Man After Excision of Large Portion of Lower Intestine.**—Gurevich has been studying the extent of assimilation of alimentary substances in a man who had had 159 cm. of ileum removed. He found that only the carbohydrates are normally assimilated; nitrogen and fats, very poorly. Instead of the 12.1 per cent. which is the normal rate for unassimilated nitrogen, there was 48.15 per cent. The tests were carried out seven months after the operation, during which time the carbohydrate metabolism had become normal; that of albumin and fats was still deficient. Yet the patient was gaining in weight and was cheerful, though he still had persisting diarrhea.

103. **Cholera and Amebic Dysentery.**—Yakimoff and Demidoff recommend to examine suspicious cholera cases, during epidemics in tropical regions, not only for cholera vibrios, but also for ameba. It is necessary to stain the latter (Giemsa); it is easy to find them then. There may be a combined infection with amebic dysentery and cholera.

104. **Saline Infusion in Treatment of Sciatica.**—Gubin obtained excellent results in the treatment of sciatica with rectal injections of salt solution (1.4 teaspoonful sodium chlorid to two glassfuls of hot water) with the drop method. He used this method in seven patients and all recovered. The general reaction was profuse sweating and increased diuresis. A detailed report of one case with the description of the method, and illustrations, is given.

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105 Extermination of Body Lice. (Eenige opmerkingen over de bestrijding der kleederluizen.) N. H. Swellengrebel.
106 Improved Technic for Physiologic Electric Tests with Two Interrupted Currents. (Een reactietaster voor twee elkaar vervangende stroomen.) A. A. Grünbaum.
107 Paratyphoid Effusion in the Knee in an Infant. (Een zeldzaam geval van hydrops genu paratyphosus bij een zuigeling.) F. P. J. Doeleman.

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108 Functional Disturbances in Gait in the Young. (Infantile funktionelle Gangforstyrrelser.) P. Lorenzen.